DOCUMENT RESUME

ED 459 096 SO 033 043

AUTHOR	Koch, Franklin W., Ed.; Sims, Wendy L., Ed.; Pembrook, Randall G., Ed.
TITLE	Missouri Journal of Research in Music Education, 1989-1994.
INSTITUTION	Missouri Music Educators Association.
ISSN	ISSN-0085-350X
PUB DATE	1994-00-00
NOTE	522p.; For other issues of this journal, see SO 033 038-049. Some text may not reproduce well. Published annually. Starting with this issue, the journal no longer uses volume numbers.
AVAILABLE FROM	Editor, Missouri Journal of Research in Music Education, University of Missouri-Kansas City, Conservatory of Music, 4949 Cherry Street, Kansas City, MO 64110-2229.
PUB TYPE	Collected Works - Serials (022)
JOURNAL CIT	Missouri Journal of Research in Music Education; n26-31 1989-1994
EDRS PRICE	MF02/PC21 Plus Postage.
DESCRIPTORS	Abstracts; *Applied Music; Classroom Techniques; Elementary Secondary Education; Higher Education; *Music Activities; *Music Education; Music Teachers
IDENTIFIERS	Missouri

ABSTRACT

This journal is devoted to the needs and interests of the school and college music teachers of Missouri and the United States. Articles in Number 26 are: "The Effect of Instrument Type, Stimulus Timbre, and Stimulus Octave Placement on Tuning Accuracy" (Jane W. Cassidy); "The Relationship of Music Opportunity at the Common School Level and Subsequent Musical Activity of Persons Sixty-Five to Eighty-Five Years of Age" (June Thomsen Jetter); "Adjudication by Non-Musicians: A Comparison of Professional and Amateur Performances" (James L. Byo; Linda J. Crone); "An Investigation into the Efficacy of Using an Objectively Constructed Rating Scale for the Evaluation of University-Level Single-Reed Juries" (Margin J. Bergee); and "Assessment of Select Instrumental Music Teachers' Knowledge of the Tuba" (Charles A. McAdams). Articles in Number 27 are: "A Comparison of the Effectiveness of Supervised Computer-Administered Module Quizzes in College Music Appreciation Classes" (Ernest R. Woodruff; Phillip Heeler); "A Preliminary Investigation of the Suitability of Selected Rating Scales Used To Measure Student Music Performance Skills" (T. Clark Saunders); "Elementary School Music Teachers' Comparative Use of Classroom Time: Teachers Who Are and Are Not Orff-Schulwerk Certified" (Harry E. Price); "Carlos Chavez's Curriculum for Teaching Orchestral Conducting" (Lewis B. Hilton); "Iniciacion al la Direcion de Orquestra (Preparation of the Orchestral Director)" (written by Carlos Chavez, translated by Lewis B. Hilton); and "An Investigation of the Professional Background Role, Duties and Leadership Skills of Chairs of Music Education Programs in Higher Education" (Joseph David Shirk). Articles in Number 28 are: "The Effect of Vocal Models, Curriculum, and Grade Level on the Pitch Matching Accuracy of Adolescent Male Singers in Various Stages of Vocal Development" (Judy K. Bowers); "From Rote to Note: Using a Three Step Approach in Teaching Rhythm" (Joy Agre); "Luther Spayde, Organist, Educator and Administrator: A Study and Analysis of His Career Influence and Contribution to the Musical Art" (Nora Hulse); and "The

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Effect of Adjudicating Three Videotaped Popular Music Performances on a 'Composite Critique' Rating and an 'Overall' Rating" (Michael J. Wagner). Articles in Number 29 are: "Elementary Children's Ability To Recognize Major/Minor Mode" (Marilyn J. Kostka; Dian L. Riemer); "Choral Director's Perception of Choral Errors" (Earlene Rentz); "Modulated Intensity Discrimination among Musicians and Nonmusicians" (Randall S. Moore); "The History of Classroom Instruments in the Silver Burdett Music Series, 1885-1988" (Carol McDowell); "The Effect on Correlations within and among Adjudication Panels Systematically Removed from Festival Performances: An Exploratory Investigation" (Martin J. Bergee); "Students' Preferences for Selected Music Factors: Comparing Classroom Music Teachers' Perceptions to Research Literature Conclusions" (Melany Sturgeon); and "Attitudes of High School Band Directors toward the Value of Marching and Concert Band Contests and Selected Aspects of the Overall Band Program" (Suzanne Banister). Articles in Number 30 are: "A Comparison of Musical Performance Accuracy between Teacher-Taught and Peer-Taught Kindergarten and First Grade Students" (Carol A. Prickett; Merilyn Jones); "A Comparison of Knowledge of Children's Songs among Older Adults, College Students and Children" (Janice N. Killian); "Instrumental Student Motivation: An Exploratory Study" (Man Lin Chang; Eugenia Costa-Giomi); "Toward a Black Aesthetic: The Effect of Race on Preference and Perception of Selected Popular Music" (Steven J. Morrison); and "Suitability of a Personal Heart Rate Monitor for Use in Music Research" (Albert LeBlanc; Patricia Shehan Campbell; Peggy Codding). Articles in Number 31 are: "Devices for Recording Ongoing Responses to Music in Education and Therapy" (William E. Fredrickson); "The Effect of Time Factors and Learning on Singers' Preference for Selected Choral Repertoire" (Suzanne Rita Byrnes); "The Effect of Live versus Videotape Instruction on High School Singers' French Diction" (Suzanne Pence); and "Teachers' Perceptions of the Use and Effectiveness of Elementary Music Textbooks in Public Schools of Southwest Missouri" (Norma McClellan). Each issue contains abstracts of studies in music education. (BT)

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Missouri Journal of Research in Music Education, 1989-1994

Franklin W. Koch, Wendy L. Sims, and Randall G. Pembrook, Editors

Numbers 26-31

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MISSOURI JOURNAL OF RESEARCH IN MUSIC EDUCATION

Number 26

1989

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EDITOR'S NOTE

This issue of the Missouri Journal of Research in Music Education: Number 26, is the first to be so numbered. All previous issues are listed by a dual Volume/Issue number, the last being Volume 4, Number 5. Coinciding with this change in numbering is a change in publication date which has been moved from autumn to spring. The editorial board believes these changes will eliminate confusion among subscribers concerning current issue availability. Under this plan, the subscription date will correspond more closely to the date of the publication.

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ISSN 0085-350X

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Published by the Missouri Music
Educators Association

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PREFACE

The Missouri Journal of Research in Music Education, published by the Missouri Music Educators Association, is devoted to the needs and interests of teachers of music in Missouri and the nation. This issue is the twenty-sixth.

The members of the editorial committee are grateful to those readers who have written suggestions concerning the content of past issues and request that criticisms and suggestions again be sent to the editor concerning the content of this issue. We strive for a reasonable balance among music theory, history, philosophy, aesthetics and pedagogy.

We express our deep gratitude to the Missouri Music Educators Association for their financial support to make it possible to continue to publish the Missouri Journal of Research in Music Education.

The Editorial Board

The Missouri Journal of Research in Music Education (ISSN 0085-350X) is published annually by the Missouri Music Educators Association. Copies can be obtained by sending $2.00 (cash, check, or money order, payable to Missouri Music Educators Association) to the editor. Inquiries relating to the availability and cost of back issues should be directed to the editor.

THE EFFECT OF INSTRUMENT TYPE, STIMULUS TIMBRE, AND STIMULUS OCTAVE PLACEMENT ON TUNING ACCURACY

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Intonation problems continue to be a major concern of musicians, especially those who work with younger, less experienced students. Several procedures for remediating tuning deficiencies include teaching for beat elimination (Miles, 1972), vocalization (Elliott, 1974), and developing awareness of the factors that relate to intonation such as mechanical inconsistencies, breath support, and embouchure (McGinnis, 1962). Other research indicates that group training, contingent reinforcement, tuning while viewing a stroboscope, and practicing, as well as specific vocal and instrumental training programs, all improve pitch-matching skills and vocal abilities (Albert, 1967; Madsen & Madsen, 1972). Yet, consistently accurate intonation is rarely achieved. While use of an electronic tuning device with both visual and aural clues, or the production of a "tuning note" to be matched may result in a close approximation on that particular pitch, intonation beyond the tuning situation may be less satisfactory.

It is not surprising that pitch discrimination and accurate intonation during performance are such bewildering and elusive issues when one considers that sensitivity to slight changes in pitch is affected by differences within each individual as well as a myriad of components within each sound. For example, personal characteristics such as age and training have been demonstrated as influencing pitch discrimination (Geringer, 1983; Madsen, Edmonson, & Madsen, 1969).

Other factors such as intensity (Fletcher, 1934; Sundberg & Lundqvist, 1973), timbre, and tone quality (Swaffield, 1974; Geringer & Madsen, 1981; Madsen & Geringer, 1981) have also been identified as affecting pitch acuity. Aside from personal characteristics, a study by Vorce (1964) indicated that the ability to tune to a familiar reference pitch (A) did not relate to the same task on a less familiar tone (E flat).

Since instrumentalists must have the ability to adjust their pitch to instruments of differings ranges as well as differing timbres, it is interesting to note that each of these parameters of sound has been found to significantly affect the tuning process. Sundberg and Lindqvist (1973) found that when professional musicians were asked to tune complex tones an octave apart, the interval needed to be expanded, generally exceeding the accepted 2:1 acoustical ratio, in order to be perceived as in tune. When sine waves were used, a slightly less than 2:1 ratio appeared to result in the octave being perceived in tune. In a performance situation where a comparison was drawn between young band students' vocal and instrumental intonation, post hoc observations suggested that when students vocalized pitches an octave or more displaced from the stimulus pitch, they tended to have more difficulty with pitch matching (Cassidy, 1985).

In an early study concerning effects of timbre on intonation, it appeared that neither harmonic content nor the method of stimulus presentation (simultaneously or successively with the pitch to be tuned) influenced the tuning process (Corso, 1954). However, recent studies concluded the opposite--that timbre is indeed related to tuning (Swaffield, 1974; Wapnick & Freeman, 1980). Madsen and Geringer (1981) found that when subjects listened to flute and oboe duets containing both tone quality and intonation errors, subjects could detect the occurrence of errors but could not correctly identify the problem, apparently confusing the tone quality and intonation variables.

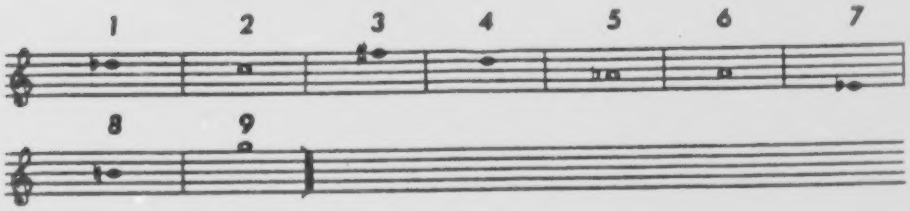
Under other conditions, where students were asked to tune various pairings of instrumental stimuli including oboe, flute, clarinet, trumpet, horn, trombone, and tuba, certain instrument combinations seemed to affect long-tone tuning accuracy (Tunks, 1979). Tunks found that some heterogeneous groupings appeared to be more difficult to tune. Additionally, some homogenous groupings (clarinet, trombone, trumpet, tuba) resulted in lower cent deviations than others (flute, horn, oboe) suggesting that perhaps it is not only the combination of various timbres which produces difficulty in tuning, but that some instrumental sounds may be inherently more difficult to tune. Timbral combinations also affected intonation in a study by Greer (1970). Brass-wind players had great difficulty tuning to sounds produced by an oscillator, but were much more accurate when tuning to pitches produced in the timbre of their own instrument.

The purpose of the current study was to investigate the effects of various parameters on the intonation of high school instrumentalists. Specifically, three questions provided the impetus for this research: 1) Are some instruments inherently easier to tune across contextual variables? 2) Does timbre of the stimulus pitch have an effect on tuning accuracy? 3) Does an octave displacement of the stimulus pitch, either above or below, have any effect on tuning accuracy?

Procedure

In order to assess accuracy in tuning to reference pitches of various timbres and octave differences, a tape recording consisting of nine stimulus pitches representing three wave forms and three octave placements was made. As familiarity with a particular pitch appears to have an effect on intonation judgments (Vorce, 1964), concert B flat was removed from consideration as a stimulus pitch due to the frequency of use as a tuning note in rehearsal situations. Concert E natural and F natural were randomly selected for elimination, leaving the nine remaining notes of the chromatic scale. Three of these notes were randomly selected to be given as reference pitches an octave above the pitch to be tuned, three an octave below, and three in the same register. Within each octave placement category one of three wave forms was assigned to each pitch--sine wave (similar in timbre to a flute), square wave (similar in timbre to a clarinet), and sawtooth wave (similar in timbre to an oboe). The nine pitches were subsequently placed in a random order for presentation (see Figure 1

Figure 1. Concert notation of subjects' performed pitches with stimulus octave placement and timbre indications.



Pitch Number	Wave Form	Stimulus Octave
1	Sine	Below
2	Square	Same
3	Sawtooth	Same
4	Sawtooth	Above
5	Square	Below
6	Square	Above
7	Sine	Same
8	Sawtooth	Below
9	Sine	Above

The pitches were generated, using A-440 Hz as the standard, by a Moog Synthesizer, System II, passed through a Teac Model 5A Tascum mixer, and were recorded by a Technics RS-1520 reel to reel tape deck at 7 1/2 IPS using Scotch 250 Audio recording tape. Verbal instructions were also included on the tape.

Twenty members of a select band at a large county high school, ten flutists and ten clarinetists, participated in this study. Demographic data, gathered at the beginning of each session, revealed a mean age of 16 years 6 months among subjects, a mean of 5.5 years of experience on band instruments, and a mean of 2.5 years of private study for the 14 subjects who had taken such lessons.

The collection of data took place in a well ventilated, air-conditioned practice room. Two reel to reel tape recorders, a Sony TC-230W used to play back the stimulus tape and a Sony TC-355 to record the tuning efforts at 7 1/2 IPS onto Scotch 250 Audio recording tape, were placed on a cart behind the subjects. A B flat (466 Hz) produced by a Zenon Chromatina chromatic tuner was recorded regularly onto the data tapes to monitor the speed of the tape recorder. Students sat in a chair facing a music stand and a Sony cardiod microphone set on an adjustable microphone stand. Due to the possibility of sound leakage from the band rehearsal room, the stimulus tape was played back through Beyer Dynamic DT-302 mini-headphones to help focus listening attention. A study by Duke (1985) on intonational performance of various musical intervals concluded that the use of headphones did not seem to affect tuning accuracy.

Students were tested individually during a late morning band rehearsal. After demographic data were collected and a short warm-up completed, during which time microphone placement and volume controls were set, subjects heard the following tape-recorded instructions through the headphones:

> During the next five minutes, you will be asked to play nine individual notes and tune each one to a reference pitch which will be provided. Each reference pitch will be played continuously for 15 seconds. Listen carefully to the tone for a moment, then play the appropriate pitch notated on the music paper in front of you. While you are playing, adjust your pitch so that it is in tune with, or sounds the same as, the pitch you are hearing. You may adjust any part of your instrument that is necessary in order to help you tune. Remember that you have 15 seconds to tune. Do not stop playing, unless it is to adjust your instrument or to take a breath, until you hear the reference pitch stop. Check the notes on the sheet in front of you, making sure you know the proper fingerings for each one. If you have any questions, please ask them at this time.
>
> Listen carefully to each tone before you begin to tune. Remember you should try to get your pitch in tune with, or to sound the same as, the tone that you hear. Do not stop playing until you hear the pitch stop.
>
> Please state your student identification number. Get ready to begin tuning pitch number one.

All subjects completed the tuning task and returned to rehearsal.

Data tapes were played back on a Sony TC-230 tape player through a Sansui Solid State AU-101 stereo amplifier. Samples then passed through Kron-Hite 3550 high pass and low pass band filters, creating a reduction in ambient noise and non-fundamental frequencies. This procedure allowed more stable readings from the General Radio 1192-B frequency counter, set at a gate time of one second and display time of one-tenth second. Headphones attached to the tape recorder permitted the researcher to listen to the tapes while transcribing.

The number which occurred most often in the final four frequency readings for each pitch was recorded and became the basis for analysis. This procedure was completed twice, independently, for 50% of the tones. Reliability, calculated using agreements/agreements plus disagreements, was .93. An agreement between determined frequencies consisted of the second frequency being equal to, plus 1 cent, or minus 1 cent, from the original frequency. None of the disagreements was greater than 2 Hz. Frequencies were subsequently converted to cents using Young's (1952) frequency to cent deviation tables. Total cent difference between the stimulus tape and the data were calculated for each pitch, and these were used in nondirectional form in the statistical analysis.

Results

A three-way analysis of variance was performed on the cent deviations to analyze for possible differences between instrument types, among stimulus octave placements, and among stimulus timbres. Results of the analysis indicated a significant difference between instruments, F (1,162) = p < .001 (see Table 1). Flute players (M = 33.02, SD = 13.12) tuned slightly less accurately than clarinet players (M = 27.42, SD = 11.34).

Table 1

Summary Table: Three-Way Analysis of Variance

Comparing Instrument Type, Stimulus Wave Form, and Timbre

Source	df	MS	F
A (Instrument)	1	1411.20	12.56***
B (Stimulus Wave Form)	2	1458.04	12.97***
C (Stimulus Timbre)	2	1148.41	10.22***
A x B	2	95.45	.85
A x C	2	60.65	.54
B x C	4	640.18	5.70***
A x B x C	4	122.09	1.09
Error	162	112.[illegible]	
Total	179	157.42	

*** p < .001

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A significant interaction between the stimulus timbre and octave placements was also evident, F (4,162) = 5.70, p < .001. This interaction is displayed in the graph in Figure 2 and table of means and standard deviations in Table 2.

Figure 2. Graph of interaction between stimulus octave placement and timbre.

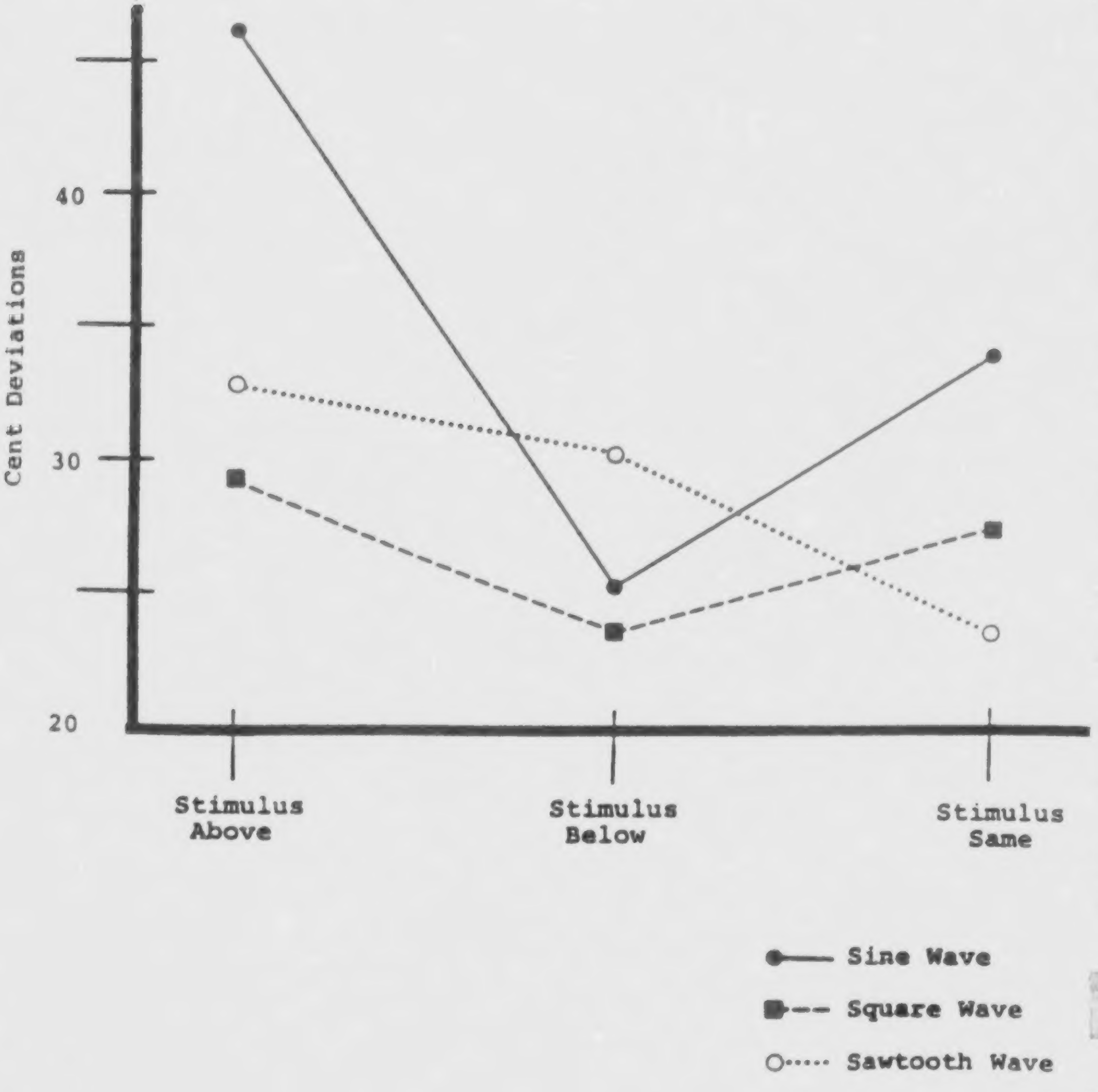

Table 2

Means and Standard Deviations of Stimulus Octave Placement and Timbre Variables

	Stimulus Above	Stimulus Below	Stimulus Same
Sine Wave	M = 46.2 SD = 10.58	M = 25.35 SD = 12.47	M = 34.0 SD = 14.49
Square Wave	M = 29.3 SD = 10.30	M = 22.8 SD = 12.48	M = 27.65 SD = 8.51
Sawtooth Wave	M = 31.9 SD = 8.65	M = 30.2 SD = [illegible]	M = 23.5 SD = 10.4

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Discussion

The purpose of this study was to determine the effects of stimulus timbre and stimulus octave placement on high school instrumentalists' ability to perform tuning tasks. Results suggest that clarinet players tuned slightly more accurately than flute players. Caution in the interpretation of these results is suggested, however, since the means were significantly, but perhaps not importantly, 5.5 cents apart. Elliott (1983) sets approximately 12 cents as a minimum distinguishable difference for eighth graders and approximately 4 cents as a minimum for high school students. This may indicate that the 5.5 cents difference is just barely, if at all, discernible.

One explanation for the results may be that the flute tone is much simpler in harmonic content than the clarinet, and as previous research has shown, accuracy in fine tuning responses is most consistently achieved when complex tones are involved (Sergeant, 1973; Zeitlin, 1964). It is interesting to note that there was no interaction between timbre of the instrument and timbre of the stimulus pitch, indicating that like-timbre did not appear to influence tuning precision as has been suggested by Greer (1970). However, Greer's study also concluded that tuning was least accurate when an oscillator provided the reference pitch. It would seem important to determine whether identical instruments result in more exact tuning, as suggested by Tunks (1979), or if like-timbre produced electronically is sufficient, since various instruments and electronically produced tones are used to provide reference pitches for ensemble tuning.

The analysis also indicates a significant interaction between the stimulus timbre and octave placement. While the sine wave and the square wave both elicited the most accurate tuning when the stimulus pitch was given an octave below the tuning note and produced the highest cent deviation when the stimulus was given above, the sawtooth wave exhibited the lowest cent deviation when the stimulus pitch was given in the same register. This creates a question as to whether, as most of the literature suggests, a complex tone generates the most accurate tuning responses under all circumstances. Since many members of instrumental ensembles tune to pitches above and below their own registers, and ensemble intonation during performance necessitates judgments being continually made with respect to different timbres and registers, this information appears to have importance in a practical sense. Band directors and others who teach tuning to young instrumentalists need to be aware of the variables which affect the tuning process in order to best structure initial learning experiences as well as to guide more sophisticated players.

During the data collection and transcription processes an observation was made which could be useful in future research for developing strategies to teach tuning. The majority of the subjects made little attempt to alter their pitch. Seven students adjusted their instruments, but none used physical control (for example embouchure change, breath support) while tuning. Whether this was due to an inability to hear that the intonation was not accurate or whether they did not know how to adjust in order to tune is not known. It would be interesting to teach students to use physical control, at least as an initial method of checking intonation, and look at the effect on tuning accuracy.

Future research might include the use of live instrumental tones as a stimulus, and the tuning of pitches nested in various positions within a chord, thereby simulating more closely the actual performance situation. Teaching students to play in tune is one of the most difficult aspects of instrumental music education. It seems that an understanding of the various factors influencing intonation would be crucial in developing a plan for the instruction of tuning. Until research indicates why and how musicians make their tuning decisions, the correction of tuning deficiencies will remain a formidable task.

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THE RELATIONSHIP OF MUSIC OPPORTUNITY AT THE COMMON SCHOOL LEVEL AND SUBSEQUENT MUSICAL ACTIVITY OF PERSONS SIXTY-FIVE TO EIGHT-FIVE YEARS OF AGE

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One of the most baffling problems for teacher trainees is curriculum planning, the selection of the information, music and experiences that will constitute the music instructional program. On the one hand trainees are constantly reminded that they are disciples for music and must plan their work around "good music." On the other hand they work with teachers who admonish them to leave their ivory tower and use amusing music and activities if they want to succeed in the practical world. The trainees recognize that the music they experience in their college classes may not be very palatable to the untrained students in their school classrooms. They feel uneasy about making difficult decisions about the curriculum they will use in their own classes and realize that administrators often do not know or care enough about music instruction to help. Conditions do not appear to have changed much from those described by Davison in 1926 when he wrote that public opinion is usually indifferent "so long as it appears that too much time is not accorded to the study of music" (p. 34). Planning curriculum under these conditions is a challenge for young teachers. Dedicated; they want to be good stewards of the musical art; they also want to keep their jobs.

School administrators, having decided that they themselves do not want to be responsible for music curricula, have left planning for music instruction almost totally in the hands of the music teachers. In some cases the music curriculum becomes a reflection of the music educator's college or university training. In other cases it reflects the persuasiveness of a particular book salesman or the adoption by a neighboring school district of a popularly acclaimed curriculum. In any case, teachers do not seek data-based evidence of the effectiveness of the curriculum they propose to adopt or suitability of the curriculum for the students in the particular school. Espousal of a new philosophical outlook by the school administration, a change in the method of scheduling classes, or a shift in national political position may change the music curriculum as completely as the acquisition of a new electronic keyboard. Within these constraints the new teacher plans a curriculum for the individual who comes to study music in his or her class. How will that curriculum serve each individual in his or her future involvement with music?

In 1986 Jetter looked at remarks from persons describing aspects of the music curriculum they had experienced when they were in the common school and their reactions to those experiences. They reported they "liked music class" (74%) but were not disappointed if they missed it "because we knew that what we did in music class wasn't really important" (Jetter, 1986). Most of the respondents in that study were under 40 years of age and were in common school music classes between 1954 and 1971, the period when "relevancy" was the watchword in curriculum planning. Apparently music educators did not achieve relevancy in their school music curriculums.

In the 1986 study the responses of the oldest subjects were not reported separately from those of other age groups. What kind of music schooling had they received when they attended the common schools and what kind of musical involvement did they have during the rest of their lives? The decision was made to investigate the questions by drawing a sample from the population of 65-85 year olds in the Kansas City, Missouri vicinity and asking them about their school music curriculum and involvement with music after they were no longer in school. Subjects of this age would have started their schooling at some time in the period of years between 1910 to 1928, a period in which school music may have been more dramatically different from that of the 1980's than was that of the 1954-1971 period.

The quality of the school music programs of the time can be inferred from statements made by writers of the day. Although some of the practicing music educators described the school music program of the day in generally positive terms, others were dissatisfied. Davison observed, "The unhappy fact is that far too many American music-teachers are only half-educated; their actual knowledge of the elements of music is often surprisingly small and their taste is pathetically undernourished" (p. 34).

When McConathy, Miessner, Birge and Bray (1933) expressed concern about the rights of the country child "to cultural advantages more nearly comparable with those enjoyed by his city cousins" (p. 33), it is evidence the music programs in the schools attended by most of the children in the country were inferior. The majority of children attended schools in rural areas or in small towns. "Cultural advantages" may include equipment and materials as well as adequate teachers and appropriate curriculum. The curriculum McConathy et al. described in Music in Rural Education was designed not only for rural and ungraded schools but for schools where more than one grade occupied the same room. It would therefore be equally useful in many schools in small towns since many of them fit the description of more than one grade in the same room. The subjects in this investigation attended those schools. What effect did these limited music programs have on the subsequent musical involvement of the students?

A questionnaire-interview design was adopted for the study for two reasons. An interview brings the teacher trainee into a face-to-face relationship with a member of the lay public and the personal attention of the interviewer seems to elicit more response from the older subject. The function of the questionnaire is to control the direction of the interview. One part of the questionnaire in this study was designed to examine the characteristics of the school music offering available to the subjects during their years in the common schools. The second part of the questionnaire examined the ways and occasions when music was part of their daily lives after they left the common schools. No attempt was made to correlate responses of individuals.

Subjects were randomly selected, retired men and women, 65-85 years of age. Each interviewer was asked to question four subjects, two in the older age bracket and two in the younger. The interviewers were undergraduate and graduate music education students at an urban university and lived in all areas of the city. Most found their subjects near their homes. Others were given the names of people to interview by persons with whom they worked. Some interviewed family members who fit the category descriptions even though they lived in other cities or towns. A few of those were great-grandparents of the interviewing student. All of those interviewed were considered in good health and "still active" as evidenced by the fact that they lived by themselves and managed their own business affairs.

Subjects were interviewed from all socio-economic levels and from rural, suburban, and urban residential areas. Because they were such a random sampling of the population it was assumed that the results might generalize to other samples of the same makeup. It was found, however, that the levels of education for these subjects were higher than expected. Fully 52% reported that they had finished high school. This was believed to be a figure unusually high for the period in question. Only 20% had stopped attending school at eighth grade or before and 29% reported they had graduated from a college, university, or technical school. Therefore it would be hazardous to try to generalize the results to populations other than the one represented by this sample.

Although consolidation of small school districts was slowly making progress when McConathy, Miessner, Birge and Bray published their book, Music in Rural Education (1933), the population around the city from which most of the subjects in this study came, was served mostly by rural or small town (population under 5,000) schools. Thirty-two percent of those who were interviewed attended rural schools; the same percentage attended town schools. Some of the respondents reported they had boarded in towns near their homes in order to be able to attend high school. Thus they were able to participate in after-school music ensembles. One subject reported that rehearsals were held at night so they did not interfere with the after-school chores of the ensemble members. The numbers reflect the rural composition of the nation at the time. Interviewers were not limited to a given geographical area in which to find subjects but the fact that most of them live in the city resulted in a sample in which 28% of the older subjects and 34% of the younger subjects had attended schools in the city and at the time of the interviews still lived there. Thus some of the subjects were products of the schools described by McConathy et al. as "culturally-advantaged."

Table 1

Demographic summary by Age Group

	Age group 1 (75-85 yrs)	Age group 2 (65-74 yrs)	Total
Level of school completed			
Grade school	9[a] 56[b] 28[c]	7[a] 44[b] 14[c]	16[d] 20[e]
High school	14[a] 34[b] 44[c]	27[a] 65[b] 55[c]	41[d] 52[e]
Technical school	4[a] 44[b] 13[c]	5[a] 11[b] 10[c]	9[d] 11[e]
Baccalaureate	4[a] 44[b] 13[c]	5[a] 11[b] 10[c]	9[d] 11[e]
Graduate	1[a] 17[b] 3[c]	5[a] 11[b] 10[c]	6[d] 7[e]
Missing	1	--	--
Total responses	32	49	81

table continues

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(Table 1 continued)

Type of school			
Rural	12[a] 38[b] 38[c]	20[a] 63[b] 40[c]	32[d] 39[e]
Town (under 5,000)	8[a] 44[b] 25[c]	10[a] 63[b] 40[c]	18[d] 22[e]
City (over 5,000)	9[a] 35[b] 28[c]	17[a] 65[b] 34[c]	26[d] 32[e]
Private school	3[a] 50[b] 9[c]	3[a] 50[b] 6[c]	6[d] 7[e]
Total responses	32	50	82

Note. a=cell total; b= % of row total; c=% of column total; d=row total; e=% of total of all rows

Table 2

Demographic summary by gender.

	Men	Women	Total
Level of school completed			
Grade school	6[a] 38[b] 20[c]	10[a] 63[b] 19[c]	16[d] 20[e]
High school	12[a] 29[b] 40[c]	29[a] 71[b] 56[c]	41[d] 50[e]
Technical school	5[a] 56[b] 17[c]	4[a] 44[b] 8[c]	9[d] 11[e]
Baccalaureate	2[a] 22[b] 7[c]	7[a] 78[b] 13[c]	9[d] 11[e]
Graduate	4[a] 67[b] 13[c]	2[a] 33[b] 4[c]	6[d] 7[e]
Missing	1	--	1
Total responses	30	52	82

table continues

(Table 2 continued)

Type of school attended			
Rural	11^a 34^b	21^a 66^b	32^d 39^e
Town (under 5,000 pop.)	4^a 22^b 13^c	14^a 78^b 27^c	18^d 22^e
City (over 5,000 pop.)	12^a 46^b 40^c	14^a 54^b 27^c	26^d 32^e
Private school	3^a 50^b 10^c	3^a 50^b 6^c	6^d 7^e
Total responses	30	52	82

Note. a=cell total; b=% of row total; c=% of column total; d=row total; e=% of total of all rows

Of the respondents who had had elementary music classes 70% reported that the classes met "most of the time" or "sometimes." Women reported having music classes in their school curriculum more often than did men. Music was taught by a music teacher in 48% of the schools that had music classes. Classroom teachers were responsible for the music class in the rest of the cases. Two-thirds of the subjects in the older group reported that music class had been taught by the classroom teacher in their elementary school experience. By the time the younger subjects were in school ten years later, the likelihood of having a classroom teacher or a music teacher teaching music was about equal. A summary table by Age is shown in Table 3 and by Gender in Table 4.

Table 3

Summary of responses for school music experience by Age group

Experience	Age group 1 (75-85 yrs)	Age group 2 (65-74yrs)	Total
Formal music class in elementary school			
Most semesters	13[a] 39[b] 41[c]	21[a] 54[b] 43[c]	34[d] 42[e]
Sometimes	9[a] 31[b] 41[c]	20[a] 69[b] 43[c]	29[d] 36[e]
Never	10[a] 31[b] 32[c]	8[a] 44[b] 16[c]	18[d] 22[e]
Total responses	32	49	81
Elementary music class taught by			
Music Specialist	7[a] 34[b] 33[c]	22[a] 76[b] 55[c]	29[d] 48[e]
Classroom Teacher	14[a] 44[b] 66[c]	18[a] 56[b] 45[c]	32[d] 52[e]
Total responses	21	40	61

table continues

(Table 3 continued)

Activity experienced most often in music class			
Singing	22[a] 40[b] 92[c]	33[a] 60[b] 80[c]	55[d] 86[e]
Listening	0[a] 0[b] 0[c]	4[a] 100[b] 10[c]	4[d] 6[e]
Playing instruments	1[a] 25[b] 4[c]	3[a] 75[b] 7[c]	4[d] 6[e]
Movement	1[a] 50[b] 4[c]	1[a] 50[b] 2[c]	2[d] 3[e]
Total responses	24	41	65
School had one or more choral groups			
Yes	19[a] 35[b] 95[c]	36[a] 65[b] 82[c]	55[d] 86[e]
No	1[a] 11[b] 5[c]	8[a] 89[b] 18[c]	9[d] 14[e]
Total	20	44	64
Member of a choral group			
Yes	7[a] 28[b] 88[c]	18[a] 72[b] 69[c]	25[d] 74[e]
No	1[a] 11[b] 12[c]	8[a] 89[b] 31[c]	9[d] 26[e]
Total responses	8	26	34

table continues

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(Table 3 continued)

Band in school			
Yes	12[a] 28[b] 41[c]	31[a] 72[b] 62[c]	43[d] 54[e]
No	17[a] 47[b] 59[c]	19[a] 53[b] 38[c]	36[d] 46[e]
Total responses	29	50	79
Member of the Band			
Yes	2[a] 15[b] 18[c]	11[a] 85[b] 39[c]	13[d] 33[e]
No	9[a] 75[b] 82[c]	17[a] 65[b] 61[c]	26[d] 65[e]
Sometimes	1[a] 100[b] 100[c]	0[a] 0[b] 0[c]	1[d] 2[e]
Total responses	12	28	40
Orchestra in school			
Yes	4[a] 22[b] 14[c]	14[a] 78[b] 28[c]	18[d] 23[e]
No	24[a] 40[b] 86[c]	36[a] 60[b] 72[c]	60[d] 77[e]
Total responses	28	50	78

table continues

(Table 3 continued)

Member of the orchestra			
Yes	1^a 11^b 25^c	8^a 89^b 73^c	9^d 60^e
No	3^a 50^b 75^c	3^a 50^b 27^c	6^d 40^e
Total	4	11	15

Note. a=cell total; b=% of row total; c=% of column total; d=row total; e=% of total of all rows

Table 4

Summary of responses for school music experience by Gender

Experience	Men	Women	Total
Formal music class in elementary			
Most semesters	7[a] 21[b] 23[c]	27[a] 79[b] 53[c]	34[d] 42[e]
Sometimes	14[a] 48[b] 47[c]	15[a] 52[b] 29[c]	29[d] 36[e]
Never	9[a] 50[b] 30[c]	9[a] 59[b] 18[c]	18[d] 22[e]
Total responses	30	51	81
Elementary music class taught by			
Music Specialist	9[a] 31[b] 43[c]	20[a] 69[b] 50[c]	29[d] 48[e]
Classroom Teacher	12[a] 38[b] 57[c]	20[a] 63[b] 50[c]	32[d] 52[e]
Total responses	21	40	61

table continues

(Table 4 continued)

Activity experienced most often in music class			
Singing	16[a] 29[b] 76[c]	39[a] 71[b] 89[c]	55[d] 85[e]
Listening	2[a] 50[b] 10[c]	2[a] 50[b] 5[c]	4[d] 6[e]
Playing instruments	2[a] 30[b] 10[c]	2[a] 50[b] 5[c]	4[d] 6[e]
Movement	1[a] 50[b] 5[c]	1[a] 50[b] 2[c]	2[d] 3[e]
Total responses	24	41	65
School had one or more choral groups			
Yes	19[a] 35[b] 76[c]	36[a] 65[b] 92[c]	55[d] 86[e]
No	6[a] 67[b] 24[c]	3[a] 33[b] 8[c]	9[d] 14[e]
Total resaponses	25	39	64
Member of a choral group			
Yes	6[a] 24[b] 22[c]	19[a] 76[b] 40[c]	25[d] 33[e]
No	13[a] 43[b] 48[c]	17[a] 57[b] 35[c]	30[d] 40[e]
Sometimes	2[a] 50[b] 7[c]	2[a] 50[b] 4[c]	4[d] 5[e]

table continues

(Table 4 continued)

No choral group	6[a] 38[b] 22[c]	10[a] 63[b] 21[c]	16[d] 21[e]
Total responses	27	48	75
Band in school			
Yes	16[a] 37[b] 55[c]	27[a] 63[b] 54[c]	43[d] 54[e]
No	13[a] 36[b] 59[c]	23[a] 64[b] 38[c]	36[d] 46[e]
Total responses	29	50	79
Member of the Band			
Yes	3[a] 23[b] 19[c]	10[a] 77[b] 37[c]	13[d] 30[e]
No	10[a] 38[b] 63[c]	16[a] 59[b] 60[c]	26[d] 60[e]
Sometimes	3[a] 75[b] 19[c]	1[a] 25[b] 4[c]	4[d] 9[e]
Total responses	16	27	44
Orchestra in school			
Yes	7[a] 39[b] 24[c]	11[a] 61[b] 22[c]	18[d] 23[e]
No	22[a] 37[b] 76[c]	38[a] 63[b] 78[c]	60[d] 77[e]
Total responses	29	49	78

table continues

(Table 4 continued)

Yes	4^a 44^b 57^c	5^a 56^b 63^c	9^d 60^e
No	3^a 50^b 43^c	3^a 50^b 38^c	6^d 40^e
Total responses	7	8	15

Note. a=cell total; b=% of row total; c=% of column total; d=row total; e=% of total of all rows

Singing was the activity most often experienced in music classes for all subjects (85%). Listening, playing instruments, and movement were inconsequential music class activities for most of them. Eighty-six percent (n=55) of the schools attended by these respondents had one or more choral groups. Seventy-two percent of the women (n=18) and 28% (n=7) of the men reported singing in a choral ensemble.

Forty-three subjects reported there had been a band in their school. Three of the older subjects and ten of the younger subjects were members of the band. Although it is commonly held that men dominated band membership in those days, it was not true for these subjects. Ten of the thirteen subjects who reported that they had been members of the band were women and only three were men. Seven men and eleven women reported there was a school orchestra in the school they attended. Four men and five women had been members of the orchestra while they were in school.

Eleven respondents had taken a music class and 20 had leaned to play an instrument after leaving school although only 12 had taken formal lessons. More men (n=13) than women (n=7) reported that they listen to recorded music "frequently." Thirteen men and 35 women listen "sometimes" (60%). Eight women and four men reported that they never listen to recordings. Overall 85% of the subjects listen "frequently" or "sometimes" to musical recordings. See Tables 5 and 6.

Table 5

Frequencies of responses related to post school music experiences by Age group

	Age group 1 (75-85 yrs)	Age group 2 (65-74 yrs)	Total
Taken a music class since school			
Yes	4[a] 36[b] 13[c]	7[a] 64[b] 14[c]	11[d] 13[e]
No	27[a] 39[b] 84[c]	42[a] 61[b] 84[c]	69[d] 84[e]
No answer	1[a] 3[b]	1[a] 2[b]	2[d] 2[e]
Total responses	32	50	82
Learned to play an instrument since school			
Yes	8[a] 40[b] 25[c]	12[a] 60[b] 24[c]	20[d] 24[e]
No	24[a] 37[b] 75[c]	38[a] 63[b] 76[c]	59[d] 72[e]
Total responses	32	50	82
Took formal lessons			
Yes	6[a] 50[b] 60[c]	6[a] 50[b] 46[c]	12[d] 52[e]
No	4[a] 36[b] 40[c]	7[a] 64[b] 54[c]	11[d] 48[e]
Total responses	10	13	23

table continues

(Table 5 continued)

Listen to recordings			
Frequently	18[a] 38[b] 58[c]	30[a] 63[b] 60[c]	48[d] 59[e]
Sometimes	12[a] 40[b] 39[c]	18[a] 60[b] 36[c]	30[d] 37[e]
Never	1[a] 33[b] 3[c]	2[a] 67[b] 4[c]	3[d] 4[e]
Total responses	1	50	81
Listen to music programs on TV			
Frequently	9[a] 35[b] 29[c]	17[a] 65[b] 34[c]	26[d] 32[e]
Sometimes	20[a] 41[b] 65[c]	29[a] 59[b] 58[c]	49[d] 61[e]
Never	2[a] 33[b] 6[c]	4[a] 67[b] 8[c]	6[d] 7[e]
Total responses	31	50	81
Yes	13[a] 42[b] 41[c]	18[a] 58[b] 36[c]	31[d] 36[e]
No	17[a] 38[b] 53[c]	28[a] 62[b] 56[c]	45[d] 55[e]
No response	2[a] 33[b] 6[c]	4[a] 67[b] 8[c]	6[d] 7[e]
Total responses	32	50	82

table continues

(Table 5 continued)

Hear as well as always			
Not as well	16[a] 40[b] 50[c]	24[a] 60[b] 50[c]	40[d] 49[e]
Just as well	14[a] 37[b] 44[c]	24[a] 63[b] 50[c]	40[d] 49[e]
No answer	2[a] 50[b] 6[c]	2[a] 50[b] 4[c]	4[d] 5[e]
Total responses	32	50	82
Enjoyment while listening (of those who said they did not hear as well as formerly)			
Less enjoyment	10[a] 38[b] 66[c]	16[a] 62[b] 73[c]	26[d] 70[e]
As much enjoyment	5[a] 45[b] 33[c]	6[a] 55[b] 27[c]	11[d] 30[e]
Total responses	15	22	37
Would you join a social group whose main function was listening to music?			
Yes	13[a] 45[b] 43[c]	16[a] 55[b] 32[c]	29[d] 36[e]
No	17[a] 33[b] 57[c]	34[a] 67[b] 68[c]	51[d] 63[e]
Total responses	30	50	80
Should there be a speaker?			
Yes	10[a] 40[b] 37[c]	15[a] 60[b] 33[c]	25[d] 34[e]
No	17[a] 35[b]	31[a] 65[b]	48[d] 66[e]

	63[c]	67[c]	
Total responses	27	46	73
Would you like information about recordings you might like to buy, or about radio or TV programs you might like to hear at these meetings?			
Yes	10[a] 40[b] 37[c]	15[a] 60[b] 33[c]	25[d] 34[e]
No	18[a] 38[b] 67[c]	30[a] 63[b] 63[c]	48[d] 64[e]
Total responses	27	48	75

Note. a=cell total; b=% of row total; c=% of column total; d=row total; e=% of total of all rows

Table 6

Frequencies of responses related to post school music experiences by gender

	Men	Women	Total
Taken a music class since school			
Yes	5[a] 45[b] 17[c]	6[a] 55[b] 12[c]	11[d] 13[e]
No	25[a] 36[b] 83[c]	44[a] 64[b] 85[c]	69[d] 84[e]
No answer	0[a] 00[b] 00[c]	2[a] 100[b] 4[c]	2[d] 3[e]
Total responses	30	52	82
Learned to play an instrument since school			
Yes	5[a] 25[b] 17[c]	15[a] 75[b] 29[c]	20[d] 24[e]
No	25[a] 42[b] 83[c]	37[a] 58[b] 65[c]	62[d] 72[e]
Total responses	30	52	82
Took lessons			
Yes	3[a] 25[b] 50[c]	9[a] 75[b] 45[c]	12[d] 46[e]
No	3[a] 27[b] 50[c]	8[a] 73[b] 40[c]	11[d] 48[e]
Total responses	6	17	23

table continues

(Total 6 continued)

Listen to recordings			
Frequently	13[a]	7[a]	20[d]
	65[b]	35[b]	25[e]
	43[c]	14[c]	
Sometimes	13[a]	35[a]	48[d]
	27[b]	73[b]	60[e]
	43[c]	70[c]	
Never	4[a]	8[a]	12[d]
	33[b]	66[b]	15[e]
	13[c]	16[c]	
Total responses	30	50	80
Listen to music on the radio			
Frequently	17[a]	31[a]	48[d]
	35[b]	65[b]	60[e]
	57[c]	62[c]	
Sometimes	11[a]	18[a]	29[d]
	38[b]	62[b]	36[e]
	37[c]	36[c]	
Never	2[a]	1[a]	3[d]
	66[b]	33[b]	4[e]
	6[c]	2[c]	
Total responses	30	50	80
Listen to music programs on TV			
Frequently	9[a]	17[a]	26[d]
	30[b]	34[b]	33[e]
	35[c]	65[c]	
Sometimes	18[a]	30[a]	48[d]
	38[b]	63[b]	60[e]
	60[c]	60[c]	
Never	3[a]	3[a]	6[d]
	50[b]	50[b]	8[e]
	10[c]	6[c]	
Total responses	30	50	80

table continues

(Table 6 continued)

Like today's popular music			
Yes	13[a] 34[b] 41[c]	25[a] 66[b] 50[c]	38[d] 46[e]
No	17[a] 45[b] 53[c]	21[a] 55[b] 42[c]	38[d] 46[e]
No response	2[a] 33[b] 6[c]	4[a] 67[b] 8[c]	6[d] 6[e]
Total responses	32	50	82
Hear as well as always			
Not as well	15[a] 38[b] 50[c]	25[a] 63[b] 48[c]	40[d] 49[e]
Just as well	15[a] 39[b] 50[c]	23[a] 61[b] 44[c]	38[d] 46[e]
No answer	0[a] 00[b] 00[c]	4[a] 100[b] 8[c]	4[d] 5[e]
Total responses	30	52	82
Enjoyment while listening (of those who said they did not hear as well as formerly)			
Less enjoyment	9[a] 35[b] 64[c]	17[a] 65[b] 74[c]	26[d] 70[e]
As much enjoyment	5[a] 45[b] 36[c]	6[a] 55[b] 26[c]	11[d] 30[e]
Total responses	14	23	37

table continues

(Table 6 continued)

Would you join a social group whose main function was listening to music?			
Yes	11^{a} 38^{b} 36^{c}	18^{a} 62^{b} 36^{c}	29^{d} 36^{e}
No	19^{a} 37^{b} 63^{c}	32^{a} 63^{b} 64^{c}	51^{d} 64^{e}
Total responses	30	50	80
Should there be a speaker?			
Yes	10^{a} 40^{b} 36^{c}	15^{a} 60^{b} 33^{c}	25^{d} 34^{e}
No	18^{a} 38^{b} 64^{c}	30^{a} 63^{b} 67^{c}	48^{d} 66^{e}
Total responses	28	45	73
Would you like information about recordings you might like to buy, or about radio or TV programs you might like to hear at these meetings?			
Yes	10^{a} 37^{b} 33^{c}	17^{a} 63^{b} 38^{c}	27^{d} 36^{e}
No	20^{a} 42^{b} 67^{c}	28^{a} 58^{b} 62^{c}	48^{d} 64^{e}
Total responses	30	45	75

Note. a=cell total; b=% of row total; c=% of column total; d=row total; e=% of total of all rows

For listening, the radio is even more popular than recordings for these subjects. Ninety-six percent reported listening to music on the radio. Sixty percent listen "frequently" (n=40) and another 36% (n=29) do "sometimes." Only four percent (n=3) reported they never listen to music on the radio. In the case of television, 33% (n=26) listened to music programs "frequently" and 60% (n=48) listened "sometimes." Only eight percent, or 6 of 80 subjects, never listened to music programs on television.

Since listening was such an important musical activity throughout their lives for these subjects it is interesting to observe that only two of the older subjects and two of the younger subjects reported "listening" as the activity experienced most often in music class. That is not to say that they never listened to music in music class; equipment and recordings were available. Listening was just not considered the primary musical activity in music classes. The fact that the technology itself was still a challenge for teachers is demonstrated by McConathy et al. who advised the teachers that they should be sure that "starting records, changing records, changing needles, and winding the machine should all become relatively an automatic performance with the least possible interruption of description or discussion" (1933, p. 107). They described the most effective appreciation lesson as

> one in which talking and explanations are reduced to a minimum and listening to the music with appropriate response occupies the major time and interest of the pupils. It should be understood that quiet feeling of the mood of the music is just as truly a form of response as is an activity. (p. 107)

Generally a recording was played to "march around to" or for illustrating "moods, form, styles, periods, instruments, etc." Apparently McConathy, Miessner, Birge and Bray (1933) thought the radio more educational than recordings because they wrote,

> Nearly every radio program, especially those presented for schools, is based upon some one central idea. It may be that the idea is the presentation of the works of some great composer. Possibly some instrument of the orchestra or some orchestral group will be emphasized. It may be that some music for, such as an opera, is the topic which is stressed. (McConathy, et al., 1933, p. 103)

Each subject was asked if he or she would be interested in becoming a member of a social group that would meet to listen to and discuss music. Because radio stations seldom give the titles or composers of the music they play or make the information necessary for purchasing the recording available it was thought that some subjects might like to have access to such information within the comfortable atmosphere of a social gathering. Thirty-six percent (n=29) reported they would be interested in being a member of such a group. Eleven of those were older subjects. Seven of these thought a formal speaker on such occasions would be desirable.

It was assumed that the hearing loss that occurs with advancing age might have diminished the individual's enjoyment of music. Data from this study support the assumption. About half of the respondents (49%) reported that they did not hear as well as they had formerly and 70% of those subjects believed they enjoyed listening to music less. Given this view of their circumstances, it is surprising that the subjects have continued to listen to music as much as they report they do.

Would the subjects remember any of the pieces they might have heard in music class? The titles of six pieces were selected from books used in schools. To this list were added two pieces that might have been heard by the subjects on radio programs such as The Music Appreciation Hour conducted by Walter Damrosch and aired on the National Broadcasting Company network from 1928-1942 (Martin, 1983). Subjects were asked only if they recognized any of the titles. Only 7% (n=6) of the subjects said they recognized L'histoire du soldat (Stravinsky, 1918). The Grand Canyon Suite (Grofe, 1921) was recognized by 28% (n=24) and 30% recognized the New World Symphony (Dvorack, 1895). Sixty percent (n=29) recognized the "Moonlight" Sonata (Beethoven, 1803). It was interesting to find that only 35% recognized Oh Perfect Love, for many years a popular hymn at weddings. By comparison In the Garden was recognized by 70% of the subjects. See Table 7.

Table 7

Frequency of responses to eight selected pieces of music literature

Title of Piece	N	%
In the Garden	57	70
"Moonlight" Sonata	52	63
Tales from the Vienna Wood	49	60
The Light Cavalry Overture	30	37
Perfect Love	29	35
"New World" Symphony	25	30
Grand Canyon Suite	24	28
L'histoire du soldat	6	7

Although 38% reported that they liked popular music, only 12% liked "Rock" music. The statistic indicates many do not include "Rock" in the popular music category.

Piano and voice were the performance media they favored most. Eighty-two percent reported they liked to listen to piano music and 78% liked the sound of a singer. It was a surprise to find that there was no difference in the number who enjoyed orchestra and those who enjoyed "big band" (59%). It may indicate that the subjects regard them as the same thing. "Big bands" were often referred to as "orchestras" during the 1930's and 1940's.

The saxophone was third on the list of favored instruments after piano and voice. Violin and trumpet were equally popular (51%) and marimba was least favored (21%) of the solo instruments named for their reaction. Results for all items are shown in Table 8.

Table 8

Summary of reported frequencies of liking a performance medium

Medium	N	%
Piano	67	82
Singer	64	78
Choir	51	62
Saxophone	50	61
Orchestra	48	59 (T)
Pipe organ	48	59 (T)
"Big" band	48	59 (T)
Violin	47	57
Band	45	55
Trumpet	42	51
Guitar	41	50
Marching band	38	46
Harp	37	45
Electronic organ	35	43
Trombone	34	41
"Polka" band	32	39
Clarinet	31	38
Harmonica	29	35
Symphonic band	28	34 (T)
Flute	28	34 (T)
Cello	27	33
Accordion	26	32
"Jazz" band	22	27
Marimba	17	21
"Rock" band	10	12

Conclusions

The interviewers reported that subjects responded eagerly to the questions. They did not merely give answers to items but volunteered information they thought would allow the interviewers to better understand their life involvement with music. They also wanted the interviewers to have an understanding of what music meant to them and their friends even though they were not professional musicians.

No items were included in the questionnaire that concerned performing opportunities for those interviewed. As a general rule they are not sought out to join performing organizations. Burley (1987) has pointed out that in organizations for amateurs "The emphasis continues to stress high musical performance standards with little regard for the intrinsic value of making music for the sheer enjoyment of 'making music'." He writes that this "adult population is not viewed with great enthusiasm by many involved in education."

The Jetter study (1986) suggested that listening to music was considered a primary musical activity by the lay public themselves. Therefore it came as no surprise that listening was the primary musical activity for subjects in this study. The music they listen to, however, does not require a good deal of musical knowledge and it appears that their school music experiences did not provide a knowledge base that might have allowed them to have access to a broader range of music literature or to seek such access. Almost any of the listening activities that the subjects engaged in after their school education was over could have been successful with or without a background of school music instruction. If they had learned more about music and had experienced more practice in listening to a wider variety of music literature in school would they have included music in their lives to any greater degree?

What music curriculum would serve the lay public of tomorrow, that is, the children who are already in the schools today? Technological discoveries have provided the gramophone, radio, television, and compact disk players to the subjects in this study. If technology continues to change as it has, it can be anticipated that citizens of tomorrow will have more opportunities to use information than they have to use performance skills. If that information is to be gained in the school music curriculum the teachers who are now being trained will have to be prepared accordingly. Music classes will continue to be regarded as "not very important" if they continue to follow a curriculum that does not deal with important musical understanding, understanding that allows graduates full access to any musical experience they choose to become involved in. It appears the lay public will continue to involve themselves in music one way or another, regardless. The music teacher who wants to give them more options must consider this when he or she plans curriculum. Teachers of student music educators may want to alert their students to this important consideration in music curriculum planning.

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ADJUDICATION BY NONMUSICIANS: A COMPARISON OF PROFESSIONAL AND AMATEUR PERFORMANCES

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One of the major goals of music educators is to find effective methods of guiding students toward a highly positive experience with Western art music. In the search for ways to achieve this goal, research has identified music preference and discrimination as two areas in which extensive investigation might yield fruitful results. Preference and discrimination may be considered two separate mental processes; however, it is the relationship of these processes which requires development of discrimination skills before one can establish preferences. This is supported by LeBlanc and Sherrill (1986) who conjectured that there are three major sources of input that affect listeners' musical preference: (1) the physical characteristics of the music, (2) the influence of the environment on the listener, and (3) the personal characteristics of the listener. Research concerned with preference and discrimination has fallen into one of these three categories.

One characteristic of music that has been the focus of preference research is tempo. Numerous studies support listener preference for fast tempos (LeBlanc & Cote, 1983; LeBlanc & McCrary, 1983; LeBlanc & Sherrill, 1986; Sims, 1987). Flowers (1987) found that although fast selections received the highest ratings among children and college nonmusicians, there was no significant difference in the time college students spent listening to fast or slow music. LeBlanc (1981) examined three musical factors and found, among other things, that fast tempos were preferred by children. Subsequent research confirmed and extended these findings with respect to third grade through university-level listeners (LeBlanc, Colman, McCrary, Sherrill, & Malin, 1988).

Other studies have altered the tempo of music selections to determine subjects' ability to either detect the alteration or indicate preference for any particular variation in tempo. Geringer (1976) found that subjects preferred orchestral music recorded at faster tape speeds over unaltered versions. Wapnick (1980) allowed subjects to alter the tempo (independent of pitch and timbre changes) of music selections and found that there was significant preference for faster tempos. Altered tempo has been the focus of other research which indicated that subjects were better able to determine changes in tempo when the alteration was an increase (Geringer & Madsen, 1984; Yarbrough, 1987). Furthermore, examination of subjects' descriptions of music has shown high percentages of "tempo" descriptors applied by children and adults (Flowers, 1987; Hair, 1981).

Research involving discrimination of pitch has indicated that musical training is a factor in subjects' ability to hear differences (McGuinness, 1972) and that listeners are more accurate in identifying pitch level decreases than increases (Geringer & Madsen, 1984). Furthermore, Madsen and Geringer (1976) reported that when tone quality was isolated, musicians were able to discriminate between good and bad tone quality, but, when a sharp, flat, or in tune accompaniment was added, subjects' responses to timbre became confused with intonation. They also found that subjects preferred "in tune" or "sharp" accompaniments over "flat" accompaniments. Results of another study indicated that musicians and nonmusicians were able to discriminate between performances that were both in tune and of good tone quality, and performances that had either poor tone quality or poor intonation; however, subjects were not able to identify the specific cause (intonation, tone quality) of poor performance (Madsen & Geringer, 1981).

Concerning personal characteristics of the listener, McGuiness (1972) found no significant difference between the abilities of males and females to discriminate pitch, but did find that males tolerated much louder music than did females. LeBlanc (1982) indicated that age is an important factor in music preference, but suggested that it is difficult to isolate age from musical training and environmental influences. In a study involving Western art music, Kelly (1961) found that students' preference increased with age and musical training.

Closely linked to musical training is the subject of familiarity. Repeated listening and increased knowledge of the music had a favorable effect on subjects' preference for the music (Bradley, 1971; Bradley, 1972; Wapnick, 1976). In research involving undergraduate nonmusicians, the act of teaching music and being taught about music increased preference ratings (Flowers, 1987). Shehan (1985) reported that teaching non-Western music to students increased preference, but there was no transfer of preference to other non-Western music. By contrast, Yarbrough and Price (1987) found that neither repeated listening nor instruction about Charles Ives and his music increased the expressed preference for or the time spent listening to the music. Further research has indicated preferences for instrumental music (LeBlanc & Cote, 1983), male singers and low levels of vocal vibrato (LeBlanc & Sherrill, 1986), authority-figure verbalized opinion (Duerksen, 1972; Radocy, 1976), and confederate bias (Furman & Duke, 1987; Radocy, 1975).

Overall performance quality has not been given much consideration with respect to listener preference and discrimination. As LeBlanc (1982) states: "The quality of performance will also influence the preference response. This variable has been taken for granted so much that comparatively little experimental research has examined performance quality (p. 32)." Therefore, the purpose of the present study was to compare nonmusicians' evaluative ratings of recorded professional and amateur orchestral performances. In addition, nonmusicians indicated familiarity with, preference for, and written descriptions of music excerpts drawn from the standard orchestral repertoire.

Procedure

Subjects were 105 elementary education majors enrolled in six sections of an elementary music methods class at a major southern university. Musical background of the subjects ranged from no experience to participation in a high school music setting (band, orchestra, or choir). A stimulus audiotape was developed and consisted of seven excerpts performed by professional musicians, the same seven excerpts performed by amateur musicians, an additional professional excerpt played two times, and an additional amateur excerpt played two times. These repeated excerpts were included as a control measure. Excerpts were 20-30 seconds in length, arranged in random order, and separated by 20 seconds of silence to allow subjects to make responses. In order to compensate for less than ideal recording techniques in amateur performances, the oldest possible professional recordings were used. Other selection criteria were supported by research findings which indicated listener preference for instrumental mediums of performance and fast tempos. Accordingly, vocal music and slow tempos were avoided in the development of the stimulus audiotape. A second audiotape was then developed retaining the original order of excerpts but changing the professional/amateur sequence. Professional performances in Tape 1 were replaced by amateur performances in Tape 2, and vice versa (see

Table 1). The first tape was used in three sections of the music methods class; the second tape was used in the other three sections. Recording equipment included an Onkyo CP-1036A turntable, Stanton 500 MK II cartridge, Sony TCW5 cassette tape deck, and a Technics SA250 amplifier.

Table 1

Order of Stimulus Tapes

	Tape 1	Tape 2
1. Rimsky-Korsakoff, *Capriccio Espagnol*	Pro	Ama
2. Schubert, *Unfinished Symphony*	Pro	Ama
3. Tchaikovsky, *March Slav*	Ama	Pro
4. Bach, *Bradenburg* Concerto #3, Allegro	Ama	Pro
5. Beethoven, *Leonore* Overture	Pro	Pro
6. Rimsky-Korsakoff, *Capriccio Espagnol*	Ama	Pro
7. Vivaldi, *Concerto Grosso* in D Maj.	Ama	Ama
8. Dvorak, *Symphony #8*, Finale	Ama	Pro
9. Beethoven, *Egmont* Overture	Ama	Pro
10. Dvorak, *Symphony #8*, Finale	Pro	Ama
11. Schubert, *Unfinished Symphony*	Ama	Pro
12. Beethoven, *Prometheus* Overture	Pro	Ama
13. Tchaikovsky, *March Slav*	Pro	Ama
14. Beethoven, *Egmont* Overture	Pro	Ama
15. Beethoven, *Prometheus* Overture	Ama	Pro
16. Beethoven, *Leonore* Overture	Pro	Pro
17. Bach, *Bradenburg* Concerto #3, Allegro	Pro	Ama
18. Vivaldi, *Concerto Grosso* in D Maj.	Ama	Ama

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The listening task was designed such that it was nested within the course and administered in the regular classroom by the regular instructor. Each teacher was given identical written instructions detailing task procedures. Students were given answer sheets which included written instructions directing them to listen to each excerpt and respond by indicating the following: A. Know/Don't Know; B. Like/Dislike; C. Quality of performance was: Excellent, Good, OK, Fair, Poor; D. Two performance qualities which influenced your rating. On the answer sheets, students also indicated their music background and favorite style of music.

Results

For purposes of comparison, descriptive ratings were converted to corresponding numerical ratings (Excellent=5, Good=4, Okay=3, Fair =2, Poor 1). Subjects' nine ratings of amateur performances and nine ratings of professional performances were summed. This resulted in one overall amateur score and one overall professional score for each subject. A Wilcoxon Matched-Pairs Signed-Ranks test was calculated in order to compare amateur and professional scores. Professional excerpts were rated significantly higher than amateur excerpts, $Z=-5.635$, $n=95$, $p<.001$.

In order to ascertain certain degrees of familiarity with and preference for musical examples subjects responded to know/don't know and like/dislike categories for each excerpt in the experimental task. Of 1,885 familiarity responses, 329 (17%) were marked "know." As one might expect, non-musicians generally were not familiar with these music excerpts. Of 1,877 preference responses, 1,504 (80%) were marked "like" which indicated that subjects generally favored the musical samples. Disparity in response totals was due to instances in which subjects did not respond in all categories. Additionally, the relationship between subjects' knowledge of, and preference for, excerpts was examined. Of the total number of "know" responses, 319 (97%) were paired with the "like" response.

A Chi-Square test for k independent samples was used to compare like/dislike responses to ratings given for each excerpt. Results indicated a significant difference between what was observed and what might have been expected by chance alone for like versus dislike across the eighteen excerpts [X^2 (4, 1876) =499, $p<.001$]. Subjects exhibited a tendency to rate as "excellent" or "good" music that they liked, and to rate as "good" or "okay" music that they disliked.

Examination of the descriptors used by subjects to identify the most noticeable features in the excerpts revealed that the largest percentage of terms were nonmusical (42%). Nonmusical terms were defined as words which are not actual elements of music. Most of these terms described moods or feelings (smooth, flowing, calm, relaxing, happy, bold, strong, exciting). Other descriptors made reference to musical instruments (17%); tempo (15%); dynamics (13%); and rhythm, melody, harmony, and style (13%).

A comparison of words used to describe professional and amateur performances yielded interesting results. Professional excerpts evoked a larger number of descriptors synonymous with fast (122 professional-43 amateur), strong or exciting (150 professional-85 amateur), and loud (56 professional-29 amateur). Descriptors for amateur excerpts referred to brass instruments more often than did professional descriptors (57-16).

Discussion

The primary purpose of this study was to examine the ability of nonmusicians to discriminate between professional and amateur-caliber performances in selected, recorded, orchestral excerpts. Although the listening task did not ask subjects to directly label excerpts as "professional" or "amateur," evaluative ratings, being consistently higher for the professional excerpts, indicated that subjects with little or no formal music background were able to hear differences in performance quality. This is supported further by a stimulus tape condition that did not pair like excerpts. One might expect nonmusicians to differentiate between paired professional and amateur performances under conditions where direct comparisons (i.e., Egmont professional Egmont amateur) were possible. In the present study, random excerpt order made this comparison impossible except by chance.

An overall performance rating, of course, does not indicate specific criteria used in the evaluative process. It would seem that evaluators (not excluding trained musicians) are influenced by personal biases which reflect musical preference, level of sophistication, and aural perception, among other things. In this listening task, subjects were asked to identify two qualities of performance which influenced their overall ratings. These responses seem to give some indication of the criteria used by nonmusicians.

It was not surprising that 42% of descriptive words were nonmusical. This high percentage seems to indicate a musical naivete, consistent with lack of formal musical training. "Fast" was mentioned almost three times more often than "slow" in describing professional excerpts. A comparison of professional/amateur excerpt tempos revealed a large difference in tempo for the Prometheus excerpts only (professional performance 32% faster than amateur). In all other like-excerpts, tempo differences were not greater than 8%, perhaps suggesting that nonmusicians are capable of distinct discernment of tempo differences. Another consideration is clarity of performance in professional examples which may have given the impression of tempo differences in the direction of fastness.

The 2:1 (professional to amateur) difference in the number of "loud" responses has many implications. This may have been the result of actual differences in the performance of dynamics; it may have been caused by the impression of loudness as a function of performance clarity, and/or sophistication of recording techniques. The word "brass" was chosen to describe amateur performances four times more often than professional performances. One might expect a better blend of sounds from professional musicians and greater chance of unbalanced instrumentation in amateur groups.

One of the major concerns of music educators at all levels is the structuring of a classroom environment that makes possible positive student interactions with the subject matter of music. This is especially critical in a college course designed to encourage prospective teachers to use music in the elementary classroom. An encouraging aspect of the present study was that subjects generally liked the music. (80% "like" responses). This may be a function of an excerpt selection process that heeded the results of previous preference research which respect to medium of performance and tempo. It also may be indicative of the inherently reinforcing nature of music (Forsythe, 1975). Lastly, it may reflect effective teaching methodology. In any case, it is encouraging to note that, within the limited scope of this study, subjects seemed neither intimidated by, nor disenchanted with, Western art music.

Results of this study indicated that nonmusicians were able to aurally discriminate between professional and amateur performances of recorded orchestral music. Future research must continue to investigate variables which may influenced music preferences. Further examination of salient features of music, as indicated by nonmusicians' descriptive words, may be an avenue to more effective music training.

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AN INVESTIGATION INTO THE EFFICACY OF USING AN OBJECTIVELY CONSTRUCTED RATING SCALE FOR THE EVALUATION OF UNIVERSITY-LEVEL SINGLE-REED JURIES

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Measurement and evaluation of musical performance is an everyday occurrence at all levels of music teaching. Presently, however, there is not a concomitant concentration of research in this area, perhaps owing to the difficulty of the research task. Musical performance involves a complex set of interrelated behaviors; moreover, subjective musical factors such as interpretation and tone quality must be considered along with more easily quantifiable factors such as correct rhythms and pitches.

The renewed emphasis on a core curriculum in public education has strongly encouraged music teachers to develop strategies for more objective and precise measurement of music learning. Performance measurement must share in this new interest, especially because performance is strongly emphasized at some levels of music education.

Although they are not widely used, there presently exist several measures of musical performance demonstrating good reliability and validity. Several investigators have constructed performance measures by using their intuitive understanding of the dimension to be measured as a guide for item selection, a strategy labeled by Hase and Goldberg (1967) as intuitive-rational. Kidd (1975) constructed and validated a scale of trombone performance skills for application at the elementary and junior high levels. Bostrom (1976) developed a scale to evaluate the piano performance of students auditioning for entrance into a major university music school. In an effort to assess effects of recorded aural models on a university concert band's performance skills, Sagen (1983) developed a rating scale for band. Another investigator (Karpicke, 1988) recently developed a Gesture Response Instrument to assess conducting performance.

Other investigators have constructed measures based on a carefully defined set of performance objectives. Kruth (1973) developed one such instrument for the clarinet, while Boulton's (1974) was intended for the flute. McIntire (1988) compared an objectives-based evaluation form for high school choral performance with a widely used traditional rating form.

In an attempt to standardize performance measurement, the authors of the Watkins-Farnum Performance Scale [WFPS] (Watkins & Farnum, 1954) considered only those factors which lend themselves to quantification. More subjective factors such as tone quality were not included as evaluative criteria. Because of the scale's purported objectivity, WFPS scores have been used extensively in research studies. Some investigators (e.g., Edwards, 1978; Jacobs, 1985) have used the WFPS as a posttest measure, others (e.g., Groeling, 1975; Gordon, 1977) have used the scale as one of several dependent measures, while still others (e.g., Elliott, 1982) have used it as a measure of sightreading performance. Extensively examining the reliability and validity of the WFPS, Stivers (1972) suggested that the scale is most effective as a one-time measure, perferably of sightreading performance.

Although scales developed using the intuitive-rational approach can be refined by selecting items with high internal consistency, reliance on intuition introduces an inevitable subjectivity into the process. Performance measurement excluding vital factors because of this inherent subjectivity calls validity into question. Believing factor analysis to be a viable method for addressing these problems, Abeles (1971) employed it to develop a Clarinet Performance Rating Scale [CPRS]. Other rating scales using this strategy (enunciated as facet-factorial by Butt and Fiske, 1968) soon were developed for high school chorus (Cooksey, 1974), high school band (DCamp, 1980), snare drum (Nichols, 1985), high school vocal solo (Jones, 1986), and euphonium and tuba (Bergee, 1988a).

Levinowitz (1985) compared Abeles' CPRS to two other rating scales which were largely author-constructed. Results indicated that the CPRS had lower interjudge reliabilities than the other two scales but high intercorrelations with the two. Bergee (1988b) used the ETPRS (Euphonium-Tuba Performance Rating Scale) to rate university brass juries. Results demonstrated reliability and criterion-related validity comparable to outcomes in the study which generated the ETPRS (Bergee, 1988a).

The Clarinet Performance Rating Scale

With the CPRS, Abeles attempted to structure the evaluation of musical performance. First, he sampled experts' criticisms by asking instrumental music teachers to write essays describing aural aspects of clarinet performance. These essays, along with items garnered through a literature search, generated a large pool of items which Abeles paired with a five-option Likert-type scale. This item pool was used by instrumental music teachers to rate 100 junior high clarinet performances, the results of which were factor analyzed.

Abeles selected the five items which loaded most highly on each of six resulting factors to define the 30-item CPRS. The scale was employed for further evaluations to determine interjudge reliability and criterion-related validity. Abeles stated the three major results of the study to be: (a) a rating scale based upon a six factor structure of clarinet performance (interpretation, tone, rhythm-continuity, intonation, tempo, and articulation); (b) high interjudge reliability; and (c) satisfactory criterion-related validity. The CPRS, whose items were arranged by Abeles in the factor order given above, is presented in Figure 1.

CLARINET PERFORMANCE RATING SCALE

The purpose of the following statements is to have you as accurately as possible evaluate the performance which you have just heard. Respond to each statement on the basis of how much you agree or disagree that the statement is descriptive of the performance. Use the following five point scale:

HD - Highly disagree that the statement is descriptive
D - Slightly disagree that the statement is descriptive
NN - Neither disagree nor agree that the statement is descriptive
A - Slightly agree that the statement is descriptive
HA - Highly agree that the statement is descriptive

Please choose only one response to each statement. Please attempt to answer every statement. Circle responses.

HD D NN A HA 1. Effective musical communication. +
HD D NN A HA 2. The interpretation was musical. +
HD D NN A HA 3. The piece was played in character. +
HD D NN A HA 4. Played with musical understanding. +
HD D NN A HA 5. Played with traditional interpretation. +
HD D NN A HA 6. Thin tone quality. -
HD D NN A HA 7. Played with a natural tone. +
HD D NN A HA 8. There was a lack of tonal color. -
HD D NN A HA 9. The quality of the tone was rich. +
HD D NN A HA 10. Sounded shallow. -
HD D NN A HA 11. Uneven rhythm. -
HD D NN A HA 12. Smoothness in execution. +
HD D NN A HA 13. Melodic continuation. +

+ positively weighted - negatively weighted

Figure 1. The Clarinet Performance Rating Scale

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HD D NN A HA 14. Insecure technique. -

HD D NN A HA 15. The rhythm was distorted. -

HD D NN A HA 16. Played out of tune. -

HD D NN A HA 17. Flat in low register. -

HD D NN A HA 18. The intonation was good. +

HD D NN A HA 19. Played overall flat. -

HD D NN A HA 20. Tended to be flat. -

HD D NN A HA 21. Played too fast. -

HD D NN A HA 22. Seemed to drag. -

HD D NN A HA 23. Hurried repeated notes. -

HD D NN A HA 24. Played too slowly. -

HD D NN A HA 25. Rushed. -

HD D NN A HA 26. Squeaked. -

HD D NN A HA 27. Free from tonguing noise. +

HD D NN A HA 28. Attacks and releases were clean. +

HD D NN A HA 29. Tonguing produced thunkie sound. -

HD D NN A HA 30. Accents were played as indicated. +

Figure 1 (cont.)

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Purpose of the Study

Abeles' high reliability estimates (see Table 1) could have been an artifact of his investigative procedure, that is, his use of junior high clarinetists exclusively. Would reliability remain as high if the scale were to be used to evaluate performers at a different ability level? Furthermore, CPRS items seem to apply with equal validity to the saxophone. Would including saxophone performances in the performance set affect reliability?

Abeles' use of three groups of judges (N=9, N=12, N=11) was astute research procedure, but availability of a large number of judges is not always possible in everyday performance evaluation situations. Vasil (1973) demonstrated that groups of three to five judges displayed acceptable reliability. How would the CPRS fare if the number of judges was reduced? It appeared that university single-reed juries could provide an opportunity to study the above questions. Specifically, this investigation sought to determine the following:

1. What is the interjudge reliability of the CPRS when used as an evaluative instrument for university single-reed juries?

2. To what extent do judges' rankings, derived from CPRS scores, concur?

3. Using applied single-reed jury grades as the criterion, what is the criterion-related validity of the CPRS?

4. To what extent are CPRS scores predictive of applied single-reed jury grades?

Procedures

At the conclusion of the winter 1988 academic semester, four woodwind instructors at a major midwestern university (one flautist, one oboist, one bassoonist, and one clarinetist) evaluated one day's single-reed jury performances using the CPRS. These performances were also evaluated in the traditional manner; that is, each instructor wrote out an evaluation of the performance and assigned a global letter grade (A, A-, etc.).

Twelve undergraduate single-reed players' jury performances were evaluated. Nine were clarinetists, while three were saxophonists. The judges were asked to use CPRS items to rate the performances as accurately as possible. They were also cautioned to read each item carefully, because the scale contained both positive and negative statements (see Figure 1). The CPRS required approximately three minutes per performance to complete.

Scores were assigned to positively stated CPRS items in the following manner: Strongly Agree, 5 points; Agree, 4 points; Neutral, 3 points; Disagree, 2 points; and Strongly Disagree, 1 point. Scores were reversed for the negatively stated items. Jury letter grades were quantified using the following system: F, 0 points; D-, 1 point; D, 2 points; C-, 4 points; C, 5 points, C+, 6 points; B-, 7 points; B, 8 points, B+, 9 points, A-, 10 points; and A, 11 points.

Interjudge reliability estimates for both CPRS scores and jury grades were obtained using an analysis of variance procedure (Kerlinger, 1986, pp. 409-412; first exposited by Hoyt, 1941). To examine the degree of agreement among judges concerning performers' ranks obtained via CPRS scores, Kendall's Coefficient of Concordance, W, was applied to the outcomes.

Within the data, zero-order correlation coefficients were obtained between CPRS results and jury grades. To examine the contribution of CPRS scores in predicting the jury grade outcome, a stepwise multiple regression analysis was performed on the data set via an IBM 4381-14 mainframe computer using the SPSS^X (SPSS Inc., 1983) program REGRESSION. Because of the relatively small sample of judges, an adjustment for bias in the multiple correlation coefficient was calculated (Kerlinger, 1986, p. 538).

Results and Discussion

Table 1 presents interjudge reliability estimates both for Abeles' original investigation (averaged over three adjudication groups) and for the present one. Although predictably lower due to fewer judges, the present investigation's estimates indicate a substantial degree of reliability with the exception of factor 5. Reasons for this could include: (a) music chosen for these jury performances may have elicited somewhat scattered opinions from the judges concerning choice of correct tempo; (b) tempo considerations on the rating form may not have addressed those requisite to the performances; (c) reliability estimates for this factor in Abeles' original investigation were unduly inflated. Total score reliability (.86) was significant despite the relatively small number of judges (N=4). Interestingly, those factors of a more subjective nature, interpretation and tone, demonstrated some of the highest reliability outcomes.

Table 1

Interjudge Reliability Estimates for CPRS Factor and Total Scores

	Abeles's Study	Present Study
Factor 1: Interpretation	.92	.80**
Factor 2: Tone	.71	.79**
Factor 3: Rhythm-Continuity	.92	.67*
Factor 4: Intonation	.80	.88**
Factor 5: Tempo	.85	.36
Factor 6: Articulation	.85	.70**
Total Score	.96	.86**

Note: Abeles did not report significance levels.

*$p < .05$

**$p < .01$

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Kendall's W was used to determine the measure of agreement in judges' ranking of performances. The obtained W of .836 indicated a significant degree of agreement, X^2(3, N=12) = 36.78, $p<.001$.

Zero-order correlation coefficients between CPRS scores and jury grades appear in Table 2. With the exception of Factor 5-Jury, all coefficients are significant beyond the .05 level. The coefficient of .72 between CPRS total scores and jury grades was significant beyond the .01 level. Consistent with interjudge reliability outcomes give above, Factor 4 correlations are generally lower than other factor correlations. Factor 5's correlation of .39 with jury grades is remarkably consistent with the interjudge outcome. Correlations between factor scores and total scores as well as factor scores with one another, are consistently higher than correlations between CPRS scores and jury grades. The internal consistency of the CPRS seems to be good, but the relationship between CPRS scores and the jury grade outcome appears to be less substantial.

To examine the contributions of the factor scores in predicting the jury grade outcomes, a stepwise multiple regression analysis was performed on the data set. Factor scores served as independent variables, while jury grades served as the dependent variable.

Table 2

Zero-Order Coefficients: CPRS Scores-Jury Grades

	Factor2	Factor3	Factor4	Factor5	Factor6	Total	Jury
Factor1	.86**	.81**	.77**	.60*	.82**	.90**	.73**
Factor2		.79**	.86**	.74**	.90**	.95**	.69**
Factor3			.78**	.86**	.79**	.91**	.63*
Factor4				.67*	.88**	.93**	.70**
Factor5					.67*	.80**	.39
Factor6						.94**	.68*
Total							.72**

Note: Factor1 = Interpretation; Factor2 = Tone; Factor3 = Rhythm/Continuity; Factor4 = Intonation; Factor5 = Tempo; Factor6 = Articulation; Total = Total Score; Jury = Applied Jury Grade

*p < .05

**p < .01

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The adjusted $\underline{R}^2$ of .49 indicates that the CPRS scores accounted for a significant proportion of the variance in jury grades, $\underline{F}(3, 11)=11.62$, $\underline{p}<.05$. That is, the CPRS factor scores in combination (viz., the total score) served as a reliable predictor of jury grade outcomes. The stepwise method indicated that factor 1 (interpretation) also emerged as a significant predictor, $\underline{t}(11)=3.41$, $\underline{p}<.01$, perhaps lending evidence to Abeles' claim that the interpretation factor is "somewhat of a general factor" (1971, p. 43). The six factors, however, display a high degree of multicollinearity (see Table 2); thus, a different approach to the analysis may produce different results. Indeed, a different method of entering variables into the multiple regression equation (the ENTER method in SPSS^X) assigned a different outcome to factor 1, $\underline{t}(11)=.21$, $\underline{p}>.83$.

The CPRS appears to display adequate reliability and criterion-related validity as an evaluative instrument for university single-reed juries. Outcomes in this investigation, however, were somewhat lower than in the original CPRS study. Because of the fewer number of judges and performers, this was not unexpected.

Judges indicated that the CPRS adequately represented major aspects of single-reed playing. The CPRS has the values of being empirically-based, inclusive, reliable, and valid. Moreover, it is easy to use, flexible, and readily available. Occasions in music teaching calling for clarinet and saxophone performance to be evaluated could be greatly improved in terms of thoroughness, expedition, and fairness. Besides university jury performances, the CPRS could prove ideal for evaluating performances in the public schools, whose directors administer playing examinations on a regular basis. Useful feedback would be provided to young performers, while scores would furnish needed documentation for grades based on demonstrated progress.

Results of the present investigation further substantiate the efficacy of empirically-based rating scales. Performance measurement research, however, remains in a pioneer stage of development. Future investigations in this area should focus on developing other empirically-based performance measures and enhancing the reliability and validity of those already constructed.

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ASSESSMENT OF SELECT INSTRUMENTAL MUSIC TEACHERS' KNOWLEDGE OF THE TUBA

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Introduction

Interest in teacher education and teacher competencies has been renewed as a result of the continued quest for excellence in education. Reports recommend reforms of teacher preparation and elementary and secondary school environments. These calls for reform are directed toward teacher education programs with an added emphasis on teacher testing. The educational reform reports, declining student test scores, and political motivation have increased awareness of the importance of assessing teachers' knowledge and competency.

The State of Missouri has placed increased emphasis on testing teachers and students in teacher education programs to determine their competency. Music educators should take a proactive position by becoming involved in the process of determining how to accurately assess what is competent in our area of expertise.

A list of competencies for the undergraduate music education major compiled by Stegall (1975) includes the ability to demonstrate tuning, fingerings, methods of articulation, and proper holding/playing position for all the instruments. Stegall's survey indicated that these competencies are considered indispensable by public school band directors.

Acquisition of these competencies usually takes place in what is referred to as "secondary" or "minor" instrument classes, or brass, woodwind, or percussion "technique" classes. The goals of these classes usually include requiring the student to develop playing proficiency on different instruments, as well as building a knowledge base from which to teach the instruments. The music student whose major performance area is not a brass instrument should have knowledge exceeding his personal performance ability.

Huntley (1976) surveyed 197 universities accredited by the National Association of Schools of Music to determine the characteristics of brass technique class instruction in selected colleges and universities in the United States. With a 66.5% response rate, Huntley found that the study of brass instruments in a one semester class is the most common type of brass technique instruction. Class groupings of high brass and low brass taught separately were reported by only 16.8% of the respondents.

Typical technique instruction will introduce students to the flute, clarinet, trumpet, trombone, and percussion. The instruments most commonly taught in brass technique classes are trumpet, french horn, and trombone. Consequently, the instruction provided on instruments such as oboe, bassoon, saxophone, and tuba is not as thorough as it is with the other instruments.

While at one time thought of as a cumbersome or comical instrument, the tuba, in the past twenty years, has enjoyed a renaissance which continues to grow and broaden. Today, composers are writing greater amounts of solo literature and more challenging band and orchestra parts for the tubist.

Instrumental music teachers' knowledge of the tuba was investigated because of the increased importance attributed to the instrument.

> From an instrument often limited to playing simple bass lines in bands and orchestras, its role has changed to that of an instrument which is assigned musically rewarding and technically challenging passages. No longer can the tuba player be someone who need not practice as the other wind players because his part is so easy. Today's director-teacher must be ready to offer tuba students the kind of help needed to meet the musical demands placed on them. It is an instrument to be studied seriously. (Brown, 1981, p. 190)

Purpose

The purpose of this study was to investigate instrumental music teachers' knowledge of tuba pedagogy. Additional questions pursued were:

1. To what extent do elementary instrumental music teachers who are brass players differ in their knowledge of tuba pedagogy from those teachers who are nonbrass players?

2. To what extent do secondary instrumental music teachers who are brass players differ in their knowledge of tuba pedagogy from those teachers who are nonbrass players?

Procedures

The investigator reviewed pedagogical materials written for the instrumental music education students, instrumental music teachers, college tuba instructors, and professional tubists. This review determined the categories of knowledge of the tuba used in this investigation.

Additional materials were selected from bibliographies developed by Huntley (1976) and

Robertson (1983), the University of Illinois library holdings, the 1986 edition of Books in Print, and the catalogues of nationally known brass music publishers. The review of the materials consisted of notating the stated and implied information about the tuba and coding it according to the selected categories.

The investigator then developed a rating scale to be distributed to a panel of pedagogical experts. The panel was composed of nationally-known college tuba instructors who teach undergraduate music education majors, and who meet either of the following two criteria: (a) those who have appeared as performing artists or clinicians at any national or international symposium sponsored by the Tubists Universal Brotherhood Association (T.U.B.A.) since 1976, or (b) those who have had at least one article published in the T.U.B.A. Journal or The Instrumentalist Magazine since 1976.

Seven college tuba instructors participated in the panel. The selection of the seven was based on national reputation and willingness to participate in the study. A rating scale was developed to enable the panel to systematically provide the investigator with knowledge believed essential for the elementary and secondary instrumental music teacher. Items on the rating scale were developed from the categories and topics of tuba knowledge derived from the pedagogical materials. The panel was asked to rate the importance of each category for both elementary and secondary instrumental music teachers.

Test Development

The investigator developed a test to assess the level of knowledge instrumental music teachers have of the tuba. This test was based on the responses from the panel of experts. Only categories receiving a mean score of 4.0 or above (4.0 on a 5 point scale) would be considered for inclusion in the test. In the event an item was rated important on only one level (elementary or secondary), a test question was still developed for this item, but these items were reported as more important to one level than another. The test required no listening or performance.

In order to confirm the content validity of the test, the investigator asked three readers to determine whether the test questions reflected the domain of knowledge indicated by the panel of experts. Once content validity had been established, a pilot test was given to graduate music education students at the University of Illinois who had public school instrumental music teaching experience. An item analysis (item discrimination and item difficulty) was computed. The results of the item analysis provided the basis for adding and deleting items. Feedback from subjects taking the pilot test was used to clarify any ambiguous test items. A minimum reliability coefficient of .70 was established for the test. The investigator anticipated that the test would take no longer than 30 minutes to administer and would contain no more than 50 items.

The test format enabled the investigator to assess teacher responses to questions related to a specific criterion or domain of knowledge. Gronlund (1981) considered this type of test criterion-referenced. Gronlund (1981) further stated that, "strictly speaking, criterion-referenced and norm-referenced refer only to the method of interpreting the results" (p. 19).

Despite some disagreement between test authors, the main differences between criterion-referenced tests and norm-referenced tests are score interpretation and breadth of the domain of the test. Based on score interpretation and the highly specific domain of knowledge, the test developed for this investigation is considered to be criterion-referenced.

Colwell (1970) stated that "The most important consideration in selecting a test is whether or not it is valid" (p. 30). Content validity is determined by an inspection of the items to determine whether or not they represent the specified domain of knowledge. Content validity for the tuba knowledge test was established by defining the domain of knowledge based on agreement by experts in the field. A table of specifications (Table 1) was developed to ensure that the test items were representative of the established domain of knowledge. The categories listed in the table of specifications represent only those categories that were rated important (4.0 or higher) by the panel of experts.

The second procedure employed for establishing content validity was to determine whether or not the test items were based on the specific domain. The table of specifications, test items, and responses from the panel of experts were given to the three readers for inspection. Each reader was asked to examine whether or not the test items were based on the domain of knowledge.

Questions were developed that represented more than one level of knowledge. Bloom's taxonomy of educational objectives (Bloom, 1956) was consulted to assist in developing questions representing a broader spectrum of knowledge than just recall of specific facts. The Table of Specifications (Table 1) displays the number of questions developed in each category of knowledge in different levels of objectives.

Table 1

Table of Specifications

Categories of Tuba Knowledge	1.12	1.21	1.23	1.25	1.31	1.32	4.1	4.2	Ttl.
	Taxonomies of cognitive objectives								
Breathing Process				1			1	1	3
Direction of Air Stream					1				1
Length of Phrases					1				1
Warm-up							1		1
Articulation Syllables				1					1
Tongue Plac. (art)	1	1		1					3
Tongue Plac. (sus)	1							1	2
Embouchure Formation		4		1					5
Teeth Aperture				1				1	2
Air Speed/Range	1								1
Air Volume/Range					1				1
Keyed Tubas/ Instruments	3	1	1						5
Mouthpieces			3		1				4
Intonation		1		1	3				5
Alternate Fingerings					2				2
Use of Fourth Valve		1			1				2
Vibrato	1	1					1		3
Posture				1	1				2

(Continued)

Categories of Tuba Knowledge	1.12	1.21	1.23	1.25	1.31	1.32	4.1	4.2	Ttl.
Holding Position	1								1
Maintenance	2								2
Instructional Materials	1								1
Solo Literature	1								1
Ensemble Literature	1								1
									50

Taxonomy of Cognitive Objectives

1.12	Knowledge of Specific Facts
1.21	Knowledge of Conventions
1.23	Knowledge of Classifications and Categories
1.25	Knowledge of Methodology
1.31	Knowledge of Principles and Generalizations
1.32	Knowledge of Theories and Structures
4.10	**Analysis of Elements**
4.20	**Analysis of Relationships**

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pilot test was conducted to identify any obvious factors influencing validity or reliability and to provide data for item analysis. Members of a summer session, graduate band conducting course at the University of Illinois were selected as the pilot group. Eighteen subjects, all of whom had public school teaching experience, participated in this pilot study.

An item analysis (item discrimination and item difficulty) was computed on the results of this pilot test. The data were used to help evaluate the quality of construction, ambiguity, and homogeneity of the test items.

The investigator used the Kuder-Richardson 21 formula for calculating the reliability coefficient. Gronlund (1981) notes that "teacher made tests commonly have reliabilities somewhere between .60 and .85" (p. 114).

The second pilot had 50 items: 15 multiple choice, 17 short answer, and 18 true/false. The mean score was 29.30, the standard deviation was 7.29, and the reliability was computed at KR-21=.79. The scores ranged from a minimum of 16 to a maximum of 39.

The item analysis was examined to inspect item difficulty level and discrimination. Only three items appeared excessively difficult and possessed a poor discrimination index. No examinee answered item three correctly in the first or second pilot test. The investigator decided to delete the item from the test as the category of knowledge represented by item 3 was covered by another item. While two questionable items remained, the investigator decided to keep the items because they were valid indicators of knowledge in that specific category.

A questionnaire was developed to obtain specific demographic information about the test subjects.

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Information requested included major performing instrument and the type of amount of brass technique class instruction.

Results of the Data

Results of the Questionnaire

The test was administered to 63 public school instrumental music teachers from two large school systems in Indiana and several instrumental music teachers in central Missouri. Thirty-eight elementary instrumental music and 25 secondary instrumental music teachers participated in this study. Of the 38 elementary instrumental music teachers 13 were brass players and 25 nonbrass players. The sample of 25 secondary teachers contained 17 brass and 8 nonbrass players.

Teaching experience of the subjects ranged from 1 to 37 years. Thirty-three subjects had one semester of brass techniques, while 27 had two or more semesters of brass techniques classes. Nineteen teachers reported having taking a class specifically dealing with low brass instruments, and 22 reported they played the tuba in their brass techniques classes. Only three subjects identified the tuba as their primary performing instrument.

Analysis of the Test

All scores were analyzed to determine to what extent the groups differed in their knowledge of the tuba, based upon their test scores. A comparison was made of the test data of the elementary teachers who play a brass instrument to those who do not play a brass instrument. A comparison was also made between the secondary instrumental music teachers who were brass players with those who were nonbrass players. Knowledge level of the teachers was based on two criteria: (1) the mean scores of each of the four groups, and (2) the number of categories answered correctly by each group. The investigator established a minimum competency level of 50% for the total test scores. A minimum competency level of 50% was established for the number of categories of tuba knowledge that had to be answered correctly.

Analysis of the test results yielded the following descriptive statistics: The mean score was 26.98, the standard deviation was 6.54, and the reliability was .72 (KR-21). The scores ranged from a minimum of 10 to a maximum of 41.

One question this study sought to answer was: To what extent do teachers of beginning instrumental music students who are brass players differ in their knowledge of tuba from those teachers who are nonbrass players?

The test items were based on categories rated important for both elementary and secondary teachers. A few categories were rated important only for secondary teachers. The test was based on categories rated important (4.0 on a 5.0 scale) for both elementary and secondary teachers. The analysis of the test scores of the elementary teachers reflect their knowledge of both sets of categories. The specific elementary and secondary categories are discussed separately in the next section.

Test scores were separated between those 13 elementary teachers who were brass players and the 25 elementary teachers who were nonbrass players. The mean score of the elementary teachers who were brass players was 25.76, and the mean score of elementary teachers who were nonbrass players was 23.04. As a group the elementary teachers who were brass players answered 50% of the questions correctly and the elementary teachers who were nonbrass players answered 46% of the questions correctly. Results of a t-test for independent samples comparing mean scores of these two groups indicated that the difference was not significant, t(36)=1.58, p<.05.

Test scores were separated between the 17 secondary instrumental music teachers who were brass players and 8 secondary instrumental music teachers who were nonbrass players. The mean score of the secondary teachers who were brass players was 33.17, and the mean score of secondary teachers who were nonbrass players was 28.00. As a group, the secondary teachers who were brass players answered 66% of the questions correctly and the secondary teachers who were nonbrass players answered 56% of the questions correctly. Results of a t-test for independent samples comparing mean scores of these two groups indicated that the brass players scored significantly higher than the nonbrass players, t(23)=23, p<.05.

Finally, all scores were separated into two groups: 33 teachers with one semester of a brass techniques class and 27 with two or more semesters of brass techniques classes. The mean score for the one semester group was 27.90, the mean score for the two or more semesters group was 26.25. The difference was not significant, t(61)=.968, p<.05.

Interpretation of Data

Knowledge of the tuba was determined by the total scores and the percentage of the categories answered correctly by each group. The mean scores, percent of items answered correctly, number of categories answered correctly, and the percent of categories answered correctly by each group appear in Table 2. The group of teachers with the highest test

Table 2

Knowledge Level of
The Four Groups of Teachers

Name	Mean Score	Percent Correct	Categories Correct	Percent of Categories
Secondary Brass	33.17	66%	17	74%
Secondary Nonbrass	28.00	56%	11	48%
Elementary Brass	25.76	50%	2	16%
Elementary Nonbrass	23.04	46%	3	25%

scores was the secondary teachers who were brass players with a mean score of 33.17. Secondary teachers who were nonbrass players were the next highest scoring group with a mean score of 28.00. Elementary teachers who were brass players were third with a mean score of 25.76 and elementary teachers who were nonbrass players obtained the lowest scores with mean of 23.04.

When calculated separately, high brass players (trumpet and horn) had a mean score of 29. Low brass players had a mean score of 33 and the tuba players had a mean score of 39.5.

Conclusions, Discussions, and Recommendations

Conclusions

The following conclusions have been made based on the data gathered in this study:

1. The elementary instrumental music teachers in this study who were nonbrass players do not differ significantly in their knowledge of the tuba from those teachers who were brass players.

2. The secondary instrumental music teachers in this study who were brass players scored significantly higher in their knowledge of the tuba than those teachers who were nonbrass players.

Discussion

Teachers in this study were most knowledgeable about specific categories of knowledge that are common to both the tuba and other brass instruments. These categories included holding position, maintenance, and posture. The teachers, as a total group, were also quite knowledgeable about length of phrases, teeth aperture, tongue placement when

articulating a note, and tongue placement when sustaining a note.

Teachers in this study did not score well on the majority of tuba knowledge that professional tubists feel is important. These categories of knowledge included information on mouthpieces, intonation, embouchure, direction of air stream, warm-up, tuba literature, the fourth valve, and vibrato.

These teachers lack a general knowledge of the solo, ensemble, and instructional literature for the tuba. Only 26% of all the teachers could list any instructional materials specifically written for the tuba. Only 42% could list any solo for the tuba and only 28% could list any references for ensemble literature.

The number of brass technique courses does not have a significant effect on the subjects' test scores. There was no significant difference in the scores of teachers who had only one semester of a brass technique class from those teachers who had two or more semesters of a brass technique class.

Teachers' knowledge of the tuba is positively related to their applied major. Teachers who were brass players did score significantly higher than the teachers who were nonbrass players.

Recommendations

Based on the results of this study, the investigator makes the following recommendations:

1. **Tuba players and teachers should place a greater emphasis in their articles, books, and clinics on these same categories of tuba knowledge that are least known by instrumental music teachers.**

2. Colleges should consider offering extension classes, workshops, or symposia for the purpose of disseminating information to the instrumental music teacher in the following categories of tuba pedagogy knowledge: mouthpieces, intonation, embouchure, direction of air stream, warm-up, tuba literature, the fourth valve, and vibrato.

3. Authors planning to write or edit a new brass technique books should evaluate their texts to determine if they adequately address the categories of tuba knowledge identified in this study.

4. The test developed as a result of this study can be used as an assessment tool for teachers or students in instrumental music education programs.

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AN INVESTIGATION OF THE EFFECTS OF NATURAL MALE VOICE AND FALSETTO MALE VOICE ON FIRST-GRADE CHILDREN'S ABILITY TO SING ON PITCH

Cynthia Dian Kelsey, Master of Music Education
University of Missouri-Kansas City, 1987

ABSTRACT

The problem of this study was to determine whether first-grade students find pitch level and tonality for singing more accurately when the models are natural male voices or falsetto male voices. This study is a replication of a study done for the thesis written in 1984 by Judy Heinrich Wolf: "An Investigation of Natural Male Voice and Falsetto Male Voice on Fourth-Grade Children's Ability to Find Pitch."

A repeated measure design was used for generating data. The sample consisted of 94 first-grade students from four schools in Federal Way, Washington. Following the methods and procedures used in the Wolf study, six "items," each consisting of a song phrase, its starting pitch, and the instruction, "ready, sing," were pre-recorded by natural and falsetto male voice models. Students sang each of the items after hearing the male voice model (falsetto or natural) on the pre-recorded tape. Children's responses were tape-recorded and later rated on intonation by three judges. An analysis of variance and t-test were used to test the null hypothesis. Conclusions from the results of the data analysis were as follows:

1. Children may find pitch level and tonality with a higher rate of accuracy when the pitch is given by a falsetto male voice model.

2. Children's pitch accuracy is not affected by the quality (excellent, good, or poor) of the falsetto male voice model.

3. There is no significant interaction between the sex of the subject and the male voice model (natural vs. falsetto).

THE ABILITY OF FIRST GRADE CHILDREN TO SYNCHRONIZE MOVEMENT TO THE RHYTHM OF MELODIES IN THREE METERS

Barbara J. Forthun, Master of Music Education
University of Missouri-Kansas City, 1987

ABSTRACT

This study was designed to determine what influence, if any, the melodic rhythm of music has on the ability of first grade children to move with the metric accent of the music ("keep the "beat").

The subjects for the investigation were boys and girls in the first grade of a public elementary school of a suburban school district of greater Kansas City, Missouri.

A test including nine musical examples was given to each subject. Of the nine selections, three examples were in duple meter subdivided by two, three examples were in duple meter subdivided by three, and three examples were in triple meter.

Subjects were asked to pat the "beat" on their lap for each musical example. A panel of three judges consisting of two percussionists/teachers and one elementary music teacher judged the students. Each

student was judged twice during each selection as being either "on" or "not on" the "beat."

A Latin square design was used to generate data. The data were analyzed by Analysis of Variance with alpha level set at $p<.05$. There was no significant difference in scores in relation to meter or timbre. However, there was a significant interaction between meter and timbre. There was no significant difference in scores in relation to age. There was a significant difference in scores in relation to age. There was a significant difference in scores in relation to gender with girls scoring higher than boys.

Development in aural perception may have contributed to the higher scores of the girls. This study did not give any indication of what the interaction between meter and timbre was that affected the subjects' scores.

EFFECTS OF TWO RHYTHM READING METHODS WITH FIFTH GRADE STUDENTS

Tera Lynne Williams
University of Missouri-Kansas City

ABSTRACT

The problem of this study was to determine which of two methods, a "traditional" counting method or a "durational" rhythm reading method, is more effective for rhythm reading instruction.

An experimental pretest-posttest equivalent materials design was used to generate the data. The sample consisted of 76 fifth grade students in three groups. The classes were randomly assigned to a treatment group. One class was taught the "placement" method of rhythm reading. Another class

was taught the "durational" method of rhythm reading and the third class acted as a control group. The data were analyzed by an analysis of variance, analysis of covariance and a t-test. A $p<.05$ level of significance was set to reject the null hypotheses.

The rhythm reading instruction consisted of twenty minute lessons for seven consecutive lessons.

This study indicated that gender did not affect rhythm achievement scores. Academic achievement and musical aptitude (meter) were related to rhythm achievement. When all variables were included in the analysis of covariance, treatment group was significant. However, mean scores between the groups were not substantial. When treatment only was considered, there was no significant difference in rhythm achievement.

A significant difference was found between both written and reading rhythm pretest scores and posttest scores. This suggests that systematic, regular instruction in teaching rhythm will result in higher rhythm reading ability for students regardless of method.

THE EFFECT OF TRAINING ON VOCAL TONE AND HISS PRODUCTION FOR MENTALLY RETARDED ADOLESCENTS

Barbara J. Reynolds
University of Missouri-Kansas City

ABSTRACT

The purpose of this study was to investigate the effectiveness of a particular vocal warmup exercise for increasing the ability to sustain a tone. Ability to sustain a hiss was also tested to contrast respiratory

skills with singing skills. Both skills were compared between control and experimental groups.

The warmup used was designed specifically for use with clients who have difficulty matching pitches, sustaining a sound or particular pitch, and varying pitch directionally to produce a functional range. Subjects in the experimental group were given three trials in testing for both skills, and were tested before and after training. Control group members were tested within the same time span as the experimental group but received no training.

Results indicated no significant difference between sustained hiss production scores of the control group and those of the experimental group. However, a significant positive difference ($p<.01$) was found between the tone production scores of the two groups. It may be concluded that this vocal warmup exercise was effective in increasing the length of time a vocal tone could be sustained.

LUTHER SPAYDE, ORGANIST, EDUCATOR, AND ADMINISTRATOR: A STUDY AND ANALYSIS OF HIS CAREER INFLUENCE AND CONTRIBUTION TO THE MUSICAL ART

Nora L. Hulse
University of Missouri-Columbia

ABSTRACT

Purpose. The purpose of this study was to present and document the achievements of Luther T. Spayde, professor of organ and music theory at Central Methodist College, Fayette, Missouri for forty-two years, a career that was ended by his untimely death on October 11, 1972. Talented in many areas of

music, he also founded and directed the famous Central College A Cappella Choir, served as dean of the Swinney Conservatory for twenty years, gave organ recitals, was organist-choir director at the college church, gave lectures on music, and composed and arranged music. This study also included an evaluation of Spayde's teaching and administrative techniques.

Procedures. The introductory chapters of this study deal with the historical background of Central Methodist College and the Swinney Conservatory from 1852 to 1930, as well as Spayde's background and training. The remaining chapters consist of a study of Spayde's career at Central Methodist College as concert organist, church musician, educator, and college administrator. The appendices include questionnaire responses, documented organ recital dates and repertoire performed, A Cappella Choir repertoire, Spayde's hymn ratings from the Methodist hymnal, compositions and papers. The data for this study were secured from the following sources:

1. 108 questionnaires mailed to persons having relevant information regarding Spayde's abilities. The categories and number of respondents were: organ students, 15; A Cappella Choir members, 9; colleagues, 8; church members, 6; American Guild of Organists members, 10.

2. Printed sources including Central Methodist College newspapers, alumni bulletins, college catalogues, The Diapason and Music News, files and records kept by Spayde, A Cappella Choir recordings, organ recitals and A Cappella Choir programs.

3. Interviews with Ted Spayde, CMC alumni, present and retired CMC faculty.

Findings. On the basis of evidence presented, it seems reasonable to conclude that Spayde's impact upon the college was of tremendous significance. He devoted his life to the education of young musicians. His work as concert organist, director of the A Cappella Choir, and administrator brought extraordinary recognition to the Swinney Conservatory. He also enriched the religious life of the college and community as organist-choir director at the Linn Memorial Methodist Church.

THE EFFECT OF AUDIBLE PLUS VISUAL, VISUAL ONLY, OR NO EXTERNAL BEAT STIMULUS ON THE INTONATION OF COLLEGE STRING PLAYERS

Margaret Ellen Wirt
University of Missouri-Columbia

ABSTRACT

The purpose of this study was to examine the effects of external beat stimuli on the intonation of college string players. Subjects (N=20) performed with F and F# major scales in sixteenth notes with the metronome set at 60 beats per minute. The participants played under three conditions: 1) with the metronome beep and light; 2) with the light only; and 3) with no metronome. Judges scored each performance on a scale of 1 (poor intonation) to 5 (excellent intonation), and an interjudge reliability of .916 was obtained. Significant differences were found among the three conditions of the study for the F major scale only. Scores for the F major scale were higher than those for the comparable conditions in the F# major scale. Results indicated an increase in scores across the conditions from metronome beep and light to no metronome.

AN ANALYSIS OF ATTITUDINAL DIFFERENCES TOWARD MUSIC PERFORMANCE CLASSES IN SECONDARY SCHOOLS BY NON-PARTICIPANTS, CURRENT, AND FORMER PARTICIPANTS

Tarry A. Koutz
University of Missouri-Columbia

ABSTRACT

The purpose of this study was to assess attitudinal differences among participants, former participants, and non-participants in music performance ensembles. Of interest were responses related to self-concept of status; self-concept of aspiration; satisfaction with staff personnel, school, and school work; morale; and participation in school-sponsored organizations of students enrolled in a small, a medium, and a large high school. Also examined were reasons given by students for enrolling, not enrolling, or discontinuing enrollment in a music performance ensemble. Responses were elicited using a questionnaire adapted by the author.

Results indicated that current and former music participants displayed more positive self-concepts of status and aspiration than non-participants. The only difference in self-concept attributable to school size was the more positive self-concept of aspiration of music students in the small school.

Music students in the large school reflected a significantly more favorable degree of satisfaction toward music teachers, classrooms, and classes than music students in either the medium or small school while current participants responded to these items more favorably than former participants.

School size had no significant effect on student morale. An inverse relationship was found between

school size and participation in school-sponsored organizations.

The primary reasons indicated by music students for choosing to participate in a music performance ensemble were interest in music, pride in the group and enjoyment of performance. Reasons primarily given for dropping out were conflicts with other interests, scheduling problems, time requirements, and a dislike for the marching component of the band. The foremost reasons given by non-music students for not joining a music class were conflicts with other interests, time requirements, not seeing music as important to adulthood, friends not in music and scheduling conflicts.

INSTRUCTIONS TO CONTRIBUTORS

Editorial Policy and Procedures:

The editorial committee welcomes contributions of a philosophical, historical or scientific nature which report the results of research pertinent in any way to instruction in music as carried on in the educational institutions of Missouri.

Manuscripts are reviewed by the editorial board in a blind review process. The collective recommendation of the reviewers determines whether a manuscript will be accepted for publication. Manuscripts submitted for review must not have been published nor be under consideration for publication elsewhere.

The editorial committee subscribes to the Research Publication/Presentation Code of Ethics of the Music Research Council of the Music Educators National Conference and the National Research Committee of the National Association for Music Therapy.

Format and Style:

Articles should be typewritten with double spacing on 8 1/2 x 11 paper. Articles normally should not exceed 20 pages in length. Manuscript style should follow recommendations of the Publication Manual of the American Psychological Association (3rd ed., 1983).

To assure anonymity during the reviewing process, author's name(s) and address(es) should appear on a separate cover page only. Names and other material in the text which might identify the author(s) should be avoided.

Authors should submit four copies of their article to the editor. Deadline for submission of manuscripts for Spring publication is October 1. Manuscripts received after that date will be considered for subsequent issues. Contributors will be notified of the decision of the editorial board within 60 days.

Franklin W. Koch, Editor
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MISSOURI JOURNAL OF RESEARCH IN MUSIC EDUCATION

Number 27

1990

Published by the
Missouri Music
Educators Association

MISSOURI JOURNAL OF RESEARCH IN MUSIC EDUCATION

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Editorial Office: Department of Music, Central Missouri State University, Warrensburg, Missouri 64093.
ISSN 0085-350X

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MISSOURI JOURNAL OF RESEARCH IN MUSIC EDUCATION

Published by the Missouri Music
Educators Association

Number 27 1990

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PREFACE

The Missouri Journal of Research in Music Education, published by the Missouri Music Educators Association, is devoted to the needs and interests of teachers of music in Missouri and the nation. This issue is the twenty-seventh.

The members of the editorial committee are grateful to those readers who have written suggestions concerning the content of past issues and request that criticisms and suggestions again be sent to the editor concerning the content of this issue. We strive for a reasonable balance among music theory, history, philosophy, aesthetics and pedagogy.

We express our deep gratitude to the Missouri Music Educators Association for their financial support to make it possible to continue to publish the Missouri Journal of Research in Music Education.

The Editorial Board

The Missouri Journal of Research in Music Education (ISSN 0085-350X) is published annually by the Missouri Music Educators Association. Copies can be obtained by sending $2.00 (cash, check, or money order, payable to Missouri Music Educators Association) to the editor. Inquiries relating to the availability and cost of back issues should be directed to the editor.

A COMPARISON OF THE EFFECTIVENESS OF SUPERVISED COMPUTER-ADMINISTERED MODULE QUIZZES IN COLLEGE MUSIC APPRECIATION CLASSES

Ernest R. Woodruff
Phillip Heeler
Northwest Missouri State University

In widely used textbook on theories of learning, Bower and Hilgard reported on a very successful teaching strategy first employed by the psychologist, Fred Keller (Bower & Hilgard, 1981, p. 573). Keller, after many years as a college teacher, became dissatisfied with conventional teaching approaches. As a result of his training in psychology it was natural for him to develop a means of applying reinforcement theory to the teaching process (Keller, 1968, p. 80).

Keller proposed a system in which the teacher prepares a number of learning units for his course materials to replace or supplement lectures. The units coincide with assigned readings, lectures, or discussions. The purpose of lecturing in this system is to motivate, enrich, and focus especially on the objectives that were to be learned.

In preparation of these learning units, the instructor is very specific about what is to be learned. He must also decide how to divide the course into many self-contained units and how to assess student mastery of the units.

After preparing notes for each unit, the teacher allows the students to work at their own pace. Students demonstrate mastery of a unit by passing a short quiz over the essential points of a unit at a high level of proficiency (e.g. 80% or better) before being allowed to progress to the next unit. The availability of proctors is required for test administration, and multiple versions of each unit quiz are necessary to allow students to retake a quiz until they are able to achieve the criterion score. Unit quiz grades that are below criterion level are not recorded, and final grades are often determined by the number of units successfully completed.

Ryan (1974, p. 3) states that the behavior-analysis elements of this teaching technique are found in giving close attention to two very important but often relatively ignored aspects of teaching which are (a) clearly describing what is to be learned and (b) effective management of reinforcement for study. He further states that other features of PSI are basically administrative structures adapted to individual needs. One must conclude that PSI is not based on a particular learning theory, but that it suggests the learning environment can be so structured as to encourage students to learn by whatever means they find most appropriate.

Greer (1981) advocates the use of principles of the PSI model in all types of music classes (i.e. studio, ensemble program, and general music). The basic characteristics of the PSI model he proposes are:

> (a) The model focuses on the actions and reactions (behaviors) of the learner in terms of the instructional objectives. (b) The learning tasks are analyzed behaviorally and categorically by hierarchies. (c) Learning rates and levels are systematically monitored and preserved in numerical

> terms. (d) Strategies of teaching are based on scientifically derived principles of learning. (e) Actual teacher techniques are derived from principles and systematically practiced by the teacher in the classroom and rehearsal hall. (f) Strategies, principles, and techniques, as well as student learning, are preserved systematically, and there is an explicit system of accountability. (g) The teacher is responsible, within her or his power, for student learning. (p. 9)

According to Bower and Hilgard (1981, p. 573), studies that have compared the effectiveness of PSI with conventional methods have proven "extraordinarily favorable" to PSI. One study that supports Bower and Hilgard's recommendation of PSI was done by McMichael and Corey. A comparison of examination performance in a basic psychology course between a section taught using PSI and three control groups taught by traditional methods was done. The results were that the mean score of the PSI section was significantly higher ($\underline{p} \leq .0001$) than each of the three control group means (McMichael & Corey, 1969, p. 80).

Born, Gledhill, and Davis (1972, p. 37) also collected data that indicated a superiority of the PSI approach. The combined final and midterm exam scores of a traditional lecture section of a Psychology of Learning course were compared to two PSI sections and a section employing a combination of approaches. The mean score of the section receiving traditional lecture instruction was significantly lower ($\underline{p} < .05$) than for each of the other sections.

Kulik, Kulik, and Carmichael (1974, p. 383) surveyed numerous studies evaluating the effectiveness of the

Keller plan (PSI) in science teaching. Their review of evaluative research on PSI resulted in several general conclusions including that (a) students prefer instruction by PSI over lecture and (b) students report that they feel they learn more in PSI than lecture courses.

Research has also suggested that PSI can be successfully used in a music classroom. An experimental study by Jumpter (1981) indicated that PSI was an effective means to teach a Jazz/Rock unit to a music appreciation class. Jumpter also generated data which indicated that the students' attitude to PSI was favorable (i.e. 4.07 on a five-point Likert scale).

Implementation of PSI requires not only a vast amount of time in the preparation of course materials, but also great flexibility in proctoring quizzes. In the last twenty years since PSI was first proposed, technology has provided an alternative to the live proctoring of quizzes.

Hermann (1982) investigated the use of computers as an alternative to live proctoring of module quizzes. Subjects in his study were students in a beginning psychology course who were given a choice of taking module quizzes with a proctor or by computer. He found that both person and computer were equally effective and well-liked. Feedback was given by the computer after each attempt to pass a module quiz and was a simple statement referring the missed concept and its location within the student's written material.

East and Marasco (cited in Bork, 1981) used a computer to address the problem of course management in teaching an Introduction to Physics course. The course was self-paced, like PSI, for the first quarter, and the computer was not only used to administer quizzes but also to control access to them. A student was given access to the quiz for each course or module only after having successfully completed the previous one.

The use of computers to administer module quizzes in a course modeled after a PSI format is especially appropriate for experimental research at Northwest Missouri State University since computer terminals are available in every dormitory room, faculty office, and the library. At least the problem of access to a computer terminal is reduced to insignificance in most cases. The use of a computer program to provide the student with quizzes and feedback solves the problem of access to a "live" proctor since the students have virtual 24-hour access to computer files.

Computers have been effectively used to administer exams; however, it has not been shown that students will respond equally well in a supervised and nonsupervised setting. This study then sought to discover whether a specially designed computer program could be used to administer module quizzes in a supervised and nonsupervised setting with equal learning effectiveness as measured on unit exams taken in the classroom.

The purpose of this study was to create course materials consisting of study guides and quizzes for each unit of the course 19-201, The Enjoyment of Music, and to create computer programs that would provide access for the student to quizzes and would report the results of the quizzes to the investigator. Further, the purpose of this study was to implement the use of the computer administered module quizzes in both a supervised and nonsupervised setting.

Method

Subjects

Two sections of music appreciation students (numbering 49 and 43 respectively) who are non-music majors at Northwest Missouri State University were available for a study of the relative effectiveness of computer administered module quizzes in a supervised and nonsupervised setting. The subject matter specialist taught both sections of music appreciation that were used in the study, and the Chairman of the Computer Science Department at Northwest designed the computer program that administered the quizzes.

Design

Section one of Music 201 which met at 12:00 noon on Monday, Wednesday, and Friday was designated the control group and section two, which met immediately after section one was designated the experimental group. Since intact groups were used for the investigation, the two sections were compared on the basis of ACT scores and years of previous musical experience (many students were first semester freshmen and therefore no college G.P.A. was available). A t-test was performed on the mean ACT scores and mean number of years of previous musical experience in order to determine whether there were significant differences between the two groups.

The control group was required to take module quizzes in a supervised computer laboratory. Each student was required to show identification before taking a quiz and record the date and time of the session. The investigator then compared the written record of the date and time of the module quiz with the computer record of the date and time before accepting it as valid. The experimental group was allowed to take module quizzes at any suitable computer terminal without supervision.

The relative effectiveness of the supervised versus nonsupervised taking of module quizzes was measured by the students' performance on five unit exams which were taken in class and were based on the same objectives as the module quizzes. The mean scores on each of these unit exams were compared with a t-test. A grand mean using all five exams together was also used for comparing the performance of both groups and subjected to analysis with a t-test.

Materials

Greer (1980) presented a credit system for a college music appreciation course that, it was believed, would adequately serve as a PSI model with which to combine computer course management techniques devised for this project. Greer's model may be observed from the following description given to students:

> The work for Music 102 has been divided into 13 modules. The modules are in a definite order that follows the course outline. There is a quiz for each module that must be passed at the 80% level before advancing. A group of proctors, all of whom have mastered the content of Music 102, will administer the module quizzes. They will grade your quiz as soon as you are finished to enable you to immediately know your score. If you pass at the 80% criterion, the proctor will give you the study guide for the next module. If you fail to complete the quiz, you will be allowed to restudy the module and retake the quiz until you reach

> the 80% criterion. When you have passed the module quizzes for each unit, you will have earned the right to take a unit test. You will be encouraged to follow the term schedule, although there will be no penalty if you proceed at a slower pace. Three bonus points [approximately 30% of the total possible] will be awarded for each unit test taken on time (see appendix).

The coursework for this study was divided into 12 modules, and each module quiz had to be passed at the 85% level by midnight of the scheduled deadline before credit was awarded to the student. Although Greer's example used 80% as a criterion score, other studies had set higher scores; therefore, a compromise of 85% was chosen as the criterion score for this study. A total of 30% of the course grade was based on the timely completion of these module quizzes. Terminals linked to Vax 785/8650 mainframe computers were used exclusively to administer the quizzes.

The computer program was designed to meet several requirements. First, it had to be able to generate a different version of a module quiz each time a student attempted it, and second, it had to produce one and only one question for each objective of the module quiz. These requirements were met by using separate files for the objectives and test items for each module. The main program received input from the proper objective file after a student selected the appropriate module number, and then one question for each objective was selected from the test item file. Both the order of the objectives and the order of the multiple choice answers were randomized so that the student would be able to take a different version of the test each time it was attempted.

Thirdly, a time limit of 20 seconds was placed on responding to each question to discourage a student from consulting notes while taking a module quiz.

Other requirements for the program related to reporting the results of each attempted quiz. It was suggested by Hermann (1982) that students using computers as test administers could do so successfully if they obtained proper feedback; therefore, at the completion of a module quiz the student's score, the objectives missed, and the location of the missed objectives in the study guide were displayed for the students. The student's score, the time, and date of the attempt were reported to an indexed file from which a report could be generated to provide the investigator with the necessary information for the awarding of credit to each student.

Results

Students in this study were not randomly assigned to their groups; therefore, the two groups were tested for similarity on the basis of mean ACT scores and years of previous musical experience. The mean ACT scores for both groups were 19.88 and 19.82, and the standard deviations were 4.86 and 4.16. The results of the t-test indicated no significant different between the two mean scores, $t(82) = 0.05$, $p > .97$.

The mean years of previous musical experience were 3.56 for group 1 and 4.39 for group 2. The standard deviations were 3.13 and 3.27 for groups 1 and 2 respectively. Although a greater difference between the two groups was found to be in the area of years of previous musical experience, the t-test indicated there was no significant difference in mean years of previous medical experience, t(89) = 1.24, p>.22.

At least on these two important variables the two groups were comparable. Therefore, it was assumed that a valid comparison of performance on exams could be made.

Mean scores for each of the five unit exams is given for both groups in Table 1. In addition, a grand mean score averaging all five unit exam means is given for both groups in the first column of Table 1 labeled total. The results of the t-test comparing the unit test means and the grand means for the two groups were all nonsignificant.

Table 1

Summary of t-Test Results Comparing the Mean Scores on Five Unit Exams of the Control Group (1) and Experimental Group (2) and Combined Mean Scores

Exam	Group	N	Mean	Standard Deviation	t	df	p
1	1	49	85.78	11.52			
	2	43	84.88	10.11	0.39	90	.70
2	1	49	82.90	13.04			
	2	43	82.58	12.35	0.12	90	.91
3	1	47	72.47	13.52			
	2	43	72.56	15.44	0.03	88	.98
4	1	48	80.29	11.69			
	2	42	82.95	12.83	1.03	88	.31
5	1	47	89.70	8.13			
	2	42	89.76	7.47	.04	87	.97
Total	1	49	80.58	12.63			
	2	43	81.74	10.24	.48	90	.63

Note. The n for each exam varies because some students in each class failed to complete each test.

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Discussion

Since Hermann (1982) concluded that the computer could effectively be used to administer quizzes in a PSI context, the investigators sought to determine whether or not supervision of the computer-administered quizzes would influence unit exam scores. The investigators expected that students taking module quizzes in a nonsupervised setting might attempt to use notes or obtain scores by some other inappropriate means and would therefore not be as well-prepared as students who were supervised while taking module quizzes for their unit exams. The data, however, did not indicate a statistically significant superiority of the exam scores of either group. It appears that the independent variable, supervision versus non-supervision, had no significant effect on student performance on unit exams.

Potentially, several factors might have contributed to the results obtained in this study. For example, the completion of module quizzes could account for a maximum of only 30% of the final grade; therefore, it was believed that a student would not feel such pressure to pass that he would use inappropriate means to do so. Also, the randomization of the question order and 20-second wait factor for each item were built into the computer program to discourage students from using their notes while taking a quiz. Given the conditions of the weighing of quiz scores in calculating final grades, and the design of the computer program both the supervised and nonsupervised administration of module quizzes seemed equally effective.

Although the difference in the mean number of modules completed in both groups, as shown in Table 2, was not statistically significant, the mean number was slightly higher in the experimental group (10.7381 compared to 10.2708 in the control group). This fact (possibly attributable to greater accessibility to work stations) coupled with the need for proctors required by the supervised approach, made the nonsupervised approach more attractive to both teachers and students alike.

Table 2

Summary of t-Test Results Comparing the Mean Number of Module Quizzes Completed by the Control Group (1) and Experimental Group (2)

Group	N	Mean	Standard Deviation	t	df	p
1	48	10.27	2.51			
2	42	10.74	1.90	.98	88	.33

The investigators respectfully suggest that future research be conducted in this area using other variables that might influence the retention of information. Two such variables are the number of attempts allowed for each quiz and the amount of elapsed time required before an exam could be repeated. It is quite possible that students would prepare themselves better if they knew they had a limited number of chances to succeed. Requiring some minimum amount of elapsed time between attempts would also encourage students to mentally rehearse information before repeating a quiz and thereby potentially increase the retention of information.

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A PRELIMINARY INVESTIGATION OF THE SUITABILITY OF SELECTED RATING SCALES USED TO MEASURE STUDENT MUSIC PERFORMANCE SKILLS

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In the recent past, there has been a comprehensive reexamination of publicly and privately supported educational programs throughout the United States. Many evaluation committees A Nation Prepared (1986), A Nation at Risk (1983), and Tomorrow's Teachers (1986) have concluded that the quality of academic programs at all levels is not sufficient to prepare students to function as competent adults in our society. The committees report that students have not been taught well and that the content of their course requirements has eroded in recent years. Many students are learning less and are not adequately prepared to contribute to the communities in which they live.

Numerous solutions have been proposed to rectify the problems challenging the public educational process. Many school curriculum committees advocate the improvement of teacher effectiveness and the upgrading of public school course requirements (Holmes Group, 1986). Unfortunately, those suggestions have been interpreted by some as a signal to strengthen and stress the teaching of language skills, mathematics, and the natural sciences while de-emphasizing or dismantling programs in music and the other fine arts.

As a result, music teachers and music supervisors are being asked to increasingly defend music as an essential part of school curricula. Music supervisors and music teachers are being asked to demonstrate, with empirical evidence, student achievement of music performance and music listening skills.

Previous research in the measurement and evaluation of student performance skills (Apfelstadt, 1985; Abeles, 1971; Feierabend, 1983; Rutkowski, 1987; Saunders, 1984) has assessed student music performance skills consistently using special procedures that isolate students from the classroom. Procedures that isolate students for individual testing have yielded more than adequate interjudge reliability coefficients (r>.90). When music performance is examined with students isolated for evaluation, the degree of error (differences between true and obtained student scores) attributed to individual differences between judges is relatively low.

Removing individual students from a classroom, however, disrupts normal general music classroom activities and, therefore, is not a practical evaluation method for a music supervisor or music teacher to perform periodically. Procedures that interfere with normal classroom routines of instruction are often met with concern by individual general music teachers and school administrators. Moreover, procedures that remove students to examine individual behavior in a standardized situation cannot be considered "typical." It is a sample of student response to a special situation; *a music performance opportunity being tested alone by an adult.*

In an investigation of seven year old students' ability to sing rote songs, Buckton (1983) recorded individual students within large class groups by the use of small personal microphones. The recorded performances were later graded by the researcher outside of the classroom with the aid of a seven point rating scale. The data gathered indicated sex and cultural differences among seven year old students to sing songs accurately, however, no attempt was made to determine the reliability of the judge's use of the seven-point scale.

The intent of the present research was to determine if a music supervisor could enter a classroom, observe students engaged in participatory music skill activities, and successfully obtain measurement results that are reliable. Is it possible to achieve suitable measurement results without isolating students from the class group? There are inherent problems in attempting to assess individual student music performance skills within a large class group. Music performance achievement is a complex behavior difficult to assess in the face of any outside influencing variables. The use of personal microphones with multichannel recording equipment requires special expertise and extraordinary procedures that would disrupt normal classroom activities. However in a large group context, judges reasonably would have a more difficult time isolating individual students for accurate and consistent evaluations without the use of special equipment.

This study was initiated with the intent to develop measurement instruments and methodology for evaluating music performance skills of young children without the need to alter normal classroom activities. Once convinced that assessment instruments and procedures yielded consistent and accurate results, a supervisor of music would then be able to proceed to evaluate student progress periodically, without the need for considerable prior arrangements, and be confident that the results reflect the magnitude of student learning growth. The purpose of this study, therefore, was to gather data to determine the suitability of the use of a set of music performance rating scales in a natural general music classroom setting, without the need for special equipment or to remove individual students for evaluation. More specifically, could rating scales which are used to assess objectively student music skill learning in regard to: a) rote song performance, b) echo-singing brief tonal patterns and c) echo-clapping brief rhythm patterns be shown to be reliable when used in an unaltered large-group music classroom setting?

Method

Within a general music classroom, two trained music specialists evaluated individual student's abilities to perform three different music skill activities. Participants in the study were 120 kindergarten and 60 first grade students who were enrolled in the Baltimore City Schools. The students who participated in the evaluation project came from a variety of ethnic backgrounds and wide range of socioeconomic levels. The students received weekly instruction of general/vocal music from trained music specialists. Individual class groups included approximately 20 to 30 students.

Students chosen for individual music skill performance assessment were selected at random prior to the judges entering the music classroom. During the course of a teacher initiated music skill activity, two judges observed five different students. Both judges observed concurrently the same five students for each individual music skill activity. Individual judgments of each student took approximately two minutes to complete.

For each class group, a representative sample of fifteen students was evaluated. A different set of five randomly selected students was observed for each of the three music skills evaluated. The fifteen students were considered a representative sample of overall class achievement.

The students were observed and judged in regard to their individual ability to: a) sing a short song, b) echo-sing a selection of individual tonal patterns using a neutral syllable; and c) echo-clap a selection of individual rhythm patterns. The rote song, tonal patterns and rhythm patterns were introduced to the students during previous class meetings. Students were familiarized with the echo-clapping and echo-singing procedures by the general music teacher prior to the time of student evaluation.

Three five-criteria music performance rating scales (see Table 1) were used to assess individual student music performance skills during a large-group participatory activity. For each rating scale, each of the five written music performance criterion is sequentially more demanding. The continuous five-point rating scale has been found to be more reliable than a five-criteria check list or additive type of rating scale in which the set of criteria are not sequenced in regard to difficulty levels (Gordon, 1984, p. 270). For all three rating scales used in this study, each of the criteria describes a specific level of perceivable music skill achievement. That is in contrast to sets of criteria used in music performance rating scales which define overall levels of perceived goodness such as poor, acceptable, good, and outstanding (Boyle & Radocy, 1987).

Table 1

Tonal pattern, rote song, and rhythm pattern rating scales for the first and second student performance evaluations

First Evaluation	Second Evaluation
Rote Song Rating Scale	
The student's vocal performance of of the prepared rote song:	
5. included accuracy in singing adjacent intervals and leaps	5. was accurately sung with precise pitch
4. included accuracy in singing adjacent intervals or leaps	4. was nearly accurate but included a minimum of imprecise pitches
3. included the maintenance of a pitch center and a general sense of melodic direction	3. included the maintenance of a pitch center and general sense of melodic direction
2. included the use of the singing voice and a general sense of melodic direction	2. included the use of the singing voice and a general sense of melodic direction (not in teacher pitch center)
1. did not include the use of the singing voice	1. did not include the use of the singing voice
Rhythm Pattern Rating Scale	
The student's echo-performance of the rhythm pattern:	
5. was accurately reproduced and included precise melodic rhythm	5. was accurately reproduced and included precise melodic rhythm
4. was nearly accurate but lacked precise melodic rhythm	4. was nearly accurate but lacked precise melodic rhythm

3. included a recognizable fragment fragment of the model pattern (at least two consecutive beats in length)	3. was incorrect but began to approximate the teacher-performed model (included short fragments)
2. was not recognizable but included the appropriate meter	2. was not recognizable but included an inconsistent performance of meter beats*
1. was not recognizable	1. was not recognizable

Tonal Pattern Rating Scale

The student's performance of the tonal pattern:

5. was accurate and included precise intonation	5. was accurate and included precise pitch
4. was nearly accurate but lacked precise intonation	4. was nearly accurate but lacked precise intonation
3. contained appropriate melodic direction and included some (at least one) accurate pitches	3. contained appropriate melodic direction and included some (at least one) accurate pitches
2. contained melodic direction but excluded any accurate pitches	2. contained melodic direction but excluded any accurate pitches
1. was not recognizable	1. was not recognizable

* meter beats are short consistent pulses which are superimposed upon larger recurring beats of music. A performance of meter beats provides an indication of an individual perception of duple or triple meter.

For each student and for each different skill assessment, both judges positioned themselves in close proximity to a student in order to listen to individual student performances. Most often, this required that both judges sit on opposite sides of a student seated on the floor during a particular student echo-performance. The judges listened to students individually as they participated in a group echo-response class activity. Both judges made efforts not to intimidate or discourage individual students from performing. For each student performance, each judge listened and assessed independently the perceived individual student performance skill level. After both judges completed the assessment of five different students, the music instructor started the next music performance skill activity.

Approximately fifteen weeks later in the school year the same students were reevaluated on the same set of specific individual music performance skills. The same judges who made the initial student evaluations also made the subsequent evaluations. The order in which students performed the three different performance skills and two of the three rating scales were modified for the subsequent assessments.

Design and Analysis

For both the initial and subsequent student music skill assessments, Pearson Product Moment Correlations were derived from the data to determine the interjudge reliability for each of the three rating scales. For each grade level and for each music performance skill activity, reliability coefficients were calculated from the composite group of student scores from different music classes. An interjudge reliability can also be interpreted as a coefficient of equivalence, an estimate of congruent validity (Gordon, 1984, p. 262).

Results and Discussion

Presented in Table 2 are interjudge reliability coefficients for the first evaluation of individually assessed student song, rhythm patterns and tonal pattern performances. A reliability coefficient of .85 is desired and .90 is preferred for measurement instruments which are to be used to assess individual students (George, 1980, p. 295). The interjudge reliability coefficients for the first grade class were below acceptable levels for both the song performance and rhythm pattern performance. The interjudge coefficient for the tonal pattern performance, however, did approach an acceptable level.

Table 2

Interjudge Reliability Coefficients for Individual Student Song Performance, Rhythm Pattern Performance, and Tonal Pattern Performance

	Song	Rhy. Pat.	Ton. Pat.	(n)
		First Evaluation		
Grade Level				
Kindergarten	.67	.77	.88	(120)
First Grade	.60	.69	.81	(60)
		Second Evaluation		
Kindergarten	.85	.78	.90	(120)
First Grade	.88	.83	.81	(60)

The interjudge reliability coefficients of the kindergarten students was systematically higher for all of the rating scales than the reliability coefficients of the first grade students. Nonetheless, the kindergarten song performance and rhythm pattern reliabilities were also below acceptable standards. The kindergarten tonal pattern performance reliability, however, was fairly high.

For both the kindergarten and first grade, the low and moderately low reliability coefficients may be due to a variety of factors. A degree of ambiguity among the written rating scale criteria could have contributed to a reduced score range and a resultant decrease in scorer reliability. In addition, procedural difficulties in the identification of students and the order of performance activities contributed to an artificially compressed level of quality among children's responses which also contributed to a possible reduction in the range among student scores. Another factor contributing to a reduction of score variability was the fact that different songs were used among the different class groups.

After the initial evaluation procedure and upon examination of the interjudge reliability coefficients, two of the three different rating scales were altered (Table 1). The fourth and fifth criteria (the most difficult) of the rote song rating scale were changed. After the initial use of the rating scales, both judges concluded that it was not possible to judge a student performance of adjacent intervals and leaps clearly within an active classroom setting.

The rhythm echo-clap rating scale was altered to give more specific meaning for four of the five performance criteria. Brief descriptions of the criteria were added to reduce any ambiguity as to how the specific terms were used in the rating scale. The tonal pattern rating criteria were not altered.

The process with which the rating scales were used within a general music classroom also seemed to influence the judges' ability to use the rating scales effectively. The amount of time that was necessary to identify each individual student for assessment contributed to relatively long period of time required for each music skill evaluation. The students exhibited fatigue and loss of attention due to the relatively long period of elapsed time required for each of the evaluations.

To improve the student identification process for the second evaluation procedure, students were given plainly written name signs which were clearly positioned to assure an unobstructed view from the judges. In addition, improved seating charts that indicated the student positions in the classroom clearly were provided to the judges prior to the second student music skill evaluation procedure.

The order in which specific student music performance skills were evaluated was observed to contribute to the eventual reduction in the amount of interest students would bring the performance tasks. For the first evaluation, the students were asked to first, sing a rote song; second, echo-clap rhythm patterns; third, echo-sing tonal patterns. The continuous repetitive listen-respond nature of consecutive tonal pattern and rhythm pattern performance tasks seem to have resulted in a reduction in student interest. Therefore the second evaluation procedure, the students were asked to first, echo-sing tonal patterns; second, sing a rote song; and third, echo-clap rhythm patterns.

For the first student assessment procedure, individual students were asked to perform songs that were chosen by the classroom teachers and, therefore, different songs were sung in different class groups. While the songs chosen by the different music teachers were suitable for the appropriate grade level, they were not, however, of equal difficulty levels. Bush (1986, p. 18) indicates that song length, the nature and occurrence of phrase repetition, and overall tempo as critical factors which influence the overall singing difficulty of songs among young children. The lack of consistent musical content and difficulty levels among the songs which were asked to be performed by the student contributed to the lack of consistency among student scores and obtained reliability coefficients. An extremely easy or difficult song would result in a lack of variability among student scores and would contribute to relatively low reliability coefficients. For the second evaluation procedure a new song was chosen for use with all of the different class groups. The song was chosen in regard to its relatively short length and suitable difficulty level.

Presented in Table 2 are composite interjudge reliability coefficients for the second assessment of the rote song, rhythm pattern, and tonal pattern performances for both the kindergarten and first grade students. All of the interjudge reliability coefficients are within or approaching acceptable high levels of magnitude of agreement. In contrast to the initial student performance assessments, there was an overall increase in the correlation coefficients between the two independent judges for each of the three student performance assessments.

Conclusions

During large group participatory music skill activities, student fatigue and loss of attention due to the excessive length of time and the repetitive nature of the student echo-response exercises seemed to be a primary cause of unreliable measurements of music performance skills among young students. The resultant lack of variability among student scores provides an unreliable and invalid assessment of music performance. Therefore, important to consider along with the use of appropriate rating scales in the general music classroom is the development of procedures that allow for the efficient identifications and evaluation of individual students. Music performance activities used for the evaluation of young students can reasonably be 15 to 20 minutes in length. Thus within the duration of a typical general music class period, it is possible to measure accurately only a representative sample of a total class group. For individual student assessments within a large group, rating scales that include criteria that detail technical difference between types of music content were found to be less appropriate than rating scales that include distinct descriptions of music performance levels.

The results from this study provide an initial positive indication that reliable and valid evidence of young individual student music performance achievement levels, observed during a large group student performance activities, can be collected within an unaltered general music classroom setting. However, additional validity information comparing the results of student music performance achievement obtained within a large-group environment with achievement results obtained from isolated student performance is needed. Further studies are also required to develop an additional number of music performance measurement scales that could be used to assess objectively more advanced music performance skill levels of older students.

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LEMENTARY SCHOOL MUSIC TEACHERS' COMPARATIVE USE OF CLASSROOM TIME: TEACHERS WHO ARE AND ARE NOT ORFF-SCHULWERK CERTIFIED

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Orff-Schulwerk is described as an experiential approach to music education that stresses the stimulation and development of the musical qualities of the child (Liess, 1966). Influenced by the work of Dalcroze, Orff formulated a philosophy based on the premise that music, movement, and speech are inseparable and that rhythm is the basis for all musical development (Liess, 1966; Mark, 1986; Zinar, 1984).

Basic to Orff-Schulwerk is the use of rhythmic chanting and singing (Landis & Carder, 1974; Zinar, 1984). These become the "rhythmic building bricks" (Keetman, 1974, p. 17) used to construct a basic musical vocabulary of rhythmic, melodic and harmonic materials that can be easily manipulated by children to create their own compositions (Liess, 1966; Mark, 1986; Schneider, 1969; Zinar, 1984). Following a listen-imitate-repeat or echo sequence, musical materials are assimilated with the idea that "feeling precedes intellectual understanding" (Wheeler & Raebeck, 1977, p. xix).

The inherent characteristics of Orff's philosophy are evident in the instructional devices and materials used in the Schulwerk approach (Landis & Carder, 1974); particularly the use of speech patterns to develop feeling for basic note values, meter, phrase, pitch and dynamics, and the use of rhythmic and melodic ostinati as an accompaniment to moving, singing and playing (Mark, 1986; Ponath & Bitcon, 1972; Wheeler & Raebeck, 1977). It is assumed that the areas of activity found in a typical Orff-Schulwerk program in the United States would be speech, body rhythms (body percussion), singing, instrument playing, improvisation and composition, music reading, and dance, which can be defined as improvised body movement (Keetman, 1974; Schneider, 1969). In Orff-Schulwerk creativity is "the special process of composing in the context of group participation" (Ponath & Bitcon, 1972, p. 57).

Some researchers have examined the effects of the Orff-Schulwerk approach on various student outcomes, however their studies generally did not document the classroom activities used (Siemens, 1969; Glasgow & Hamreus, 1968). The literature reveals little research documenting the activities that are suggested to occur specifically in Orff-Schulwerk classes (Munsen, 1986), while there are a number of studies that document activities in elementary school music classes (Forsythe, 1977; Kuhn, 1972; Madsen & Madsen, 1981; Moore, 1976, 1981; Moore & Bonney, 1987; Sims, 1986; Wagner & Strul, 1979).

A study designed to determine the feasibility of adapting the Orff-Schulwerk approach to American schools (Glasgow & Hamreus, 1968) used a pre/posttest design in which rhythmic and melodic memory, rhythmic and melodic improvisation, and the ability to read notation were used as dependent measures. Significant gains were found in the ability to perform rhythm patterns and create rhythmic consequent phrases, while the gains for the other measures were not significant. Siemens (1969) compared the effects of an Orff-Schulwerk approach to traditional methods on student attitudes and achievement. The results indicated a more positive level of interest and attitude for students in the Orff over the traditional approach, but no differences in musical achievement. No attempt was reported, in either of these studies, to analyze or document the types of activities (treatment) used in the Orff-Schulwerk or the traditional approach.

One study did develop a behavioral analysis for the use of an Orff-Schulwerk strategy with mentally retarded adults (Ponath & Bitcon, 1972). Articles have been written giving brief descriptions of pilot programs, such as the one at Bellflower in California (Smith, 1967), the use of Orff with exceptional children (Bevans, 1969), urban children (Mittleman, 1969), and deaf children (Birkenshaw, 1965).

A recently completed work documented the specific activities used in the Orff-Schulwerk approach (Munsen, 1986). This case study developed a description and analysis of an Orff program. The purposes were to assess the amount of time spent in active participation in music activities, students' ability in rhythmic and melodic question/answer improvisation, and student attitudes. In order to assess the time spent in music activities, a Musical Activity Record was developed. This form was used to record the amount of time that students were actively involved in singing, playing, moving, creating, listening, and reading. The teaching emphasis was on singing and playing in the primary grades, and playing, listening and creating in the intermediate grade, with improvisation activity peaking in the third grade.

Many researchers have examined the use of time in music classrooms, including Wagner and Strule (1979), who developed a Musical Activities Log in order to observe the use of time by beginning and experienced elementary school music teachers, and Moore (1976), who developed the Music Teaching Interaction-Activities Form (MTIA). The MTIA has been used to examine the activities in elementary music classrooms (Moore, 1976, 1981; Moore & Bonney, 1987) and children's choir rehearsals (Moore, 1988). Both observation instruments allowed the investigators to record continuous events occurring chronologically and the number of seconds spent on each activity. The activities on which these investigators focused, which are of interest to the current study, were instruction, singing, discussion, playing instruments, listening, rhythmic activities, and movement.

Other research has focused on time spent in active versus passive instructional settings (Murray, 1974; Forsythe, 1977; Thurman, 1976; Yarbrough & Price, 1981) and teacher/student interactions (Kuhn, 1975; Madsen & Madsen, 1981; Moore, 1988; Moore & Bonney, 1987; Price, 1983; Yarbrough, 1975; Yarbrough & Price, 1989).

The purpose of this study was to develop an observation instrument that would serve to document activities in elementary school music classrooms and discriminate between those activities that are strongly emphasized in the Orff process and those activities that might be termed traditional. This instrument was then used, for validation and data collection, to observe and record the activities taking place in fourth grade music classes led by teachers who held Orff certification and those who did not. Using this documentation of these music teachers' classes, the data were then analyzed to summarize and compare the activities of the Orff-certified teachers and those who were to find what, if any, differences could be found.

Procedures

Subjects were 12 elementary school music specialists, who held state teaching certificates, with a minimum of three years teaching experience; six of whom held the minimum of a Level 1 certificate from the American Orff-Schulwerk Association, and six who did not. The teachers, all of whom were unaware of the purposes of this study, audiotape recorded one of their fourth grade glasses of choice, using personal cassette recorders. The classes ranged in duration from 20 to 30 minutes.

The audiotape recordings were analyzed by two independent observers using a modified version of the data collection instrument employed by Wagner and Strul (1979), that used information from the works of Moore (1976, 1981, 1988), Moore and Bonney (1987), and Munsen (1986) for the development of category operational definitions. Observers coded each activity (see Figure 1) on the basis of operational definitions. Observer agreement was computed for 33% of the observations by dividing agreements by agreements plus disagreements. Average agreement was .96, with a range of .94 to 1.00.

Figure 1

Music Classroom Activity Codes

PITCHED

- Instrumental {•Pi}
  - with/without echo
  - with/without ostinato
  - mallets (Orff, Non-Orff)
  - other (i.e. recorder, autoharp)
- Vocal {•Pv}
  - with/without echo
  - with/without ostinato

RHYTHM

- Nonverbal {•Rn}
  - with/without echo
  - with/without ostinato
  - body percussion
  - unpitched percussion
- Verbal {•Rv}
  - with/without echo
  - with/without ostinato

MOVEMENT {•MO}

IMPROVISATION/CREATIVITY (unprecedented student performance) {•IC}

- pitch
- rhythm
- movement
- instrumental
- speech

DISCUSSION {•DI}

LISTENING

- Models (teacher, recordings) {•Lm}
- Teacher talk {•Lt}

Observational categories were operationally defined as follows:

Pitched--activity with specified pitches as a component; either instrumental {Pi} or vocal {Pv}.

Rhythm--rhythm activities that do not employ pitch as a component; either nonverbal {Rn}, such as playing rhythm instruments or body percussion, or verbal {Rv} such as rhythm syllabling.

Movement--interpretive whole-body movements {MO}, such as dramatization or dance.

Improvisation/Creativity--unprecedented student performance {IC}, such as verbal or instrumental improvisation or composing in any manner.

Discussion--active student involvement in speaking {DI}, such as a response to teacher questioning or asking a relevant question.

Listening--passive student involvement in listening; either to models {Lm} such as teacher performance or recordings, or teacher talking {Lt} such as instruction or directions.

Each activity observed was timed, excluding time spent entering and preparing to begin class, and the time spent preparing to leave and leaving class. This resulted in a continuous log of classroom activities for each teacher ranking from 19 minutes and 12 seconds to 28 minutes and 13 seconds.

The time data were compiled into sub-categories (see Figure 1), thus each time the students sang in echo it was put in the sub-category of pitched, vocal, echo {Pve}, for the purposes of summary and analysis. Due to the varying length of classes, the amount of seconds spent in an activity category were converted to percentage of class time; a sum of the percentages of observed behaviors resulted in a total of 100% of the observation time for each class.

Results

The purposes of this study were to develop and implement an analysis instrument for classroom activities of Orff-certified teachers and those teachers who were not, and to use the observational data to compare their activities. To examine these activities, classes of six Orff- and six non-Orff-certified teachers' fourth grade classes were audiotape recorded and analyzed for frequency and duration of various activities. These data were compiled regarding classroom activities and compared to ascertain any differences between the two groups of teachers. The following are summaries and analyses of the data for these activities. Due to differing class period lengths, the time spent on each activity was converted to percentage of total classroom time for each class.

Table 1 is a summary of the mean percentages of class time. The table includes a division of the data into Orff student-centered (active), non-Orff student-centered (active) and teacher-centered activities (passive) for classes taught by Orff- and non-Orff-certified teachers. All echo, ostinati, rhythmic verbal, body percussion, movement, and improvisation/creativity student activities were considered Orff student activities due to the emphasis placed upon them by the process descriptions.

Any student activity, including discussion, which actively involved the students and did not include Orff activities, and all teacher-centered activities--students listening to models or teachers--were designated non-Orff.

Table 1

Mean Percentages of Class Time Spent on Orff and Non-Orff Activities

	Orff	Non-Orff		
Teacher Training	Student-Centered	Student-Centered	Teacher-Centered	Sum
Orff	31.91	28.56	39.53	68.09
Non-Orff	19.32	38.04	42.64	81.68

Due to the relatively small sample size, the Mann-Whitney U test was employed for statistical comparisons of the data for classes of Orff trained with non-Orff trained teachers. No significant differences ($p>.05$) were found for overall percentage of time in Orff activities ($U(6,6)=14$, $z=.48$), non-Orff student activities ($U(6,6)=17$, $z=.16$), or teacher activities ($U(6,6)=14$, $z=.64$).

In both types of classes, the students were actively involved approximately 60% of the time while teacher-centered passive activities--listening to models or teacher --accounted for approximately 40% of the time. Although there was not a significant difference between groups, the Orff-certified teachers tended to spend more time in student-centered Orff activities and less time in non-Orff student activities than did the teachers who were not Orff-certified.

A summary of the student activities in Orff and non-Orff classes is listed in Table 2. Included for each activity are the number of classes in which it occurred and the mean percentage of class time that it occupied. Many instances of combined activities, such as pitched verbal (singing) with rhythm nonverbal (body percussion) and pitched percussion instruments (ostinato), were found. In these instances, the total percentage of time spent in a combination of activities was included in the summary percentage for each individual activity that comprised the combination; this resulted in a sum greater than 100% for the percentages of time spent in individual activities.

Table 2

Mean Percentages of Time Spent in Activities in Orff and Non-Orff Class

Activity	Orff		Non-Orff	
	n	Mean %	*n*	Mean %
Pitched - Instruments	3	12.50	2	23.28*
Pitched - Verbal	6	24.92	6	29.32
Rhythm - Nonverbal	6	17.41	4	19.56
Rhythm - Verbal	5	16.52	3	4.09*
Movement	1	4.84	2	8.42
Improvisation/Creativity	0	0.00	1	6.82
Discussion	6	16.17	5	16.67
Listening - Models	6	6.93	6	5.12
Listening - Teachers	6	32.60	6	37.52
Echo	6	13.31	4	6.80*
Ostinato	1	14.19	2	9.48
Activity Combinations	5	22.92	4	19.56

$^*p < .05$

The mean percentage of time spent in each of the classroom activities of Orff-certified teachers and those who were not Orff-certified were compared by means of the Mann-Whitney U test. Three comparisons yielded significant differences ($p<.05$) for mean percentage of time using pitched instruments ($U(3,2)=0$, $z=1.73$), rhythm-verbal ($U(5,3)=1$, $z=1.94$), and echo ($U(6,4)=3$, $z=1.92$).

Less than half of the teachers used pitched instruments, with three Orff-certified teachers using them for a significantly smaller proportion of class time than the two non-Orff-certified teachers. Orff teachers used significantly more verbal rhythmic and echoing activities, both of which are emphasized in the Orff-Schulwerk process.

There appeared to be a slight trend towards the use of a greater variety of activities by the Orff-certified teachers. Given this increased number of activities, it should be noted that in a large number of Orff as well as non-Orff classes there were no movement, improvisation/creativity, or ostinati activities; all of which are highly recommended techniques in Orff-Schulwerk and other music education methodologies.

Discussion

The purposes of this study were twofold: to develop an instrument sensitive to the activities emphasized by the Orff-Schulwerk literature as well as previous elementary school music classroom research, and to use the instrument to compare Orff-certified teachers with those who are not. The instrument was found to be reliable and useful.

No significant differences were found between Orff- and non-Orff-certified teachers' percentage of classroom time involved in student-centered Orff, non-Orff, or teacher-centered activities. There are a number of possible explanations for these results. It is possible that the activities identified in this study as Orff may include some that are not, or did not include some that are Orff activities. One must also consider that elementary school music teachers do not operate in a vacuum and may be using processes such as Orff-Schulwerk for their classroom techniques even if they are not Orff-certified. The teachers in this study were not asked questions regarding the sources of their classroom activities or their personal philosophies of music education for elementary school students.

It also can not be neglected that studying a particular concept does not necessarily lead to its implementation. It may be that the Orff certification is more indicative of completion of certain studies (knowledge), and this may or may not have a resultant effect on teachers' classroom activities (behaviors). The Orff-certified teachers may not perceive themselves as Orff-style teachers, conversely the non-Orff teachers may perceive themselves as Orff-style teachers even though they lack the certification.

The Orff-Schulwerk process is not mutually exclusive of other strategies, indeed in some instances it has been recommended that the process be combined with their methods such as Kodaly (Glasgow & Hamreus, 1969; Wheeler & Raebeck, 1977). This combining of processes might also account for the lack of differences between Orff-certified teachers and those who were not.

In the analysis of the individual categories, significant differences were found between the two groups of teachers for the mean percentage of time spent in rhythm verbal and echo activities, with Orff-certified teachers using significantly more of both. The use of rhythmic verbal and echo activities are two areas that are stressed in the Orff-Schulwerk process. Nonverbal rhythm activities are also emphasized in the Orff-Schulwerk process but their use was not found to be significantly different between the two groups. However, it was observed that the teachers who were not Orff-certified used hand clapping almost exclusively while the Orff-certified teachers used a variety of body percussion in addition to hand clapping.

It has been found that students are less attentive while involved in passive activities versus those requiring active participation (Forsythe, 1977; Madsen & Alley, 1979; Madsen, Wolfe, & Madsen, 1975; Sims, 1986; Yarbrough & Price, 1981). In the present study both groups of teachers spent approximately 40% of the time on listening (passive) activities. Over 80% of the listening time was spent in teacher talk, which was the single activity occupying the largest percentage of time. This replicates data from other elementary school music studies that found approximately 40% of third and fifth grade classes devoted to non-musical activities (Munsen, 1986), and 39% to 46% of class time devoted to passive activities (Moore, 1981; Moore & Bonney, 1987).

While the predominance of teacher talk is of concern, there are some student activities that may be of concern due to their lack of inclusion in the music classes. Movement occupied a range of 5% to 11% of class time and was found in only 3 of the 12 classes, in contrast to More and Bonney (1987) who found a mean of 165 of the class time devoted to this activity. In the present study, improvisation/creativity was only found in one class. Both movement and improvisation/creativity are activities that are universally stressed in elementary school music teacher education programs. These activities also receive a great deal of emphasis and were found to exist in an Orff-Schulwerk program (Munsen, 1986). It was also surprising to find that only one of the Orff-certified teachers made use of ostinati; a technique associated with the Orff-Schulwerk process.

Given the sample size and confines of the observation instrument, one must use caution in drawing any conclusions solely on the basis of these data. However, given the lack of documentation of the Orff-Schulwerk process and activities, an initial data collection was needed, as is more research in this area. Also, the use of videotape recordings might enhance the quantity and quality of the data collected, including information regarding nonverbal and movement activities.

Orff-Schulwerk is a process and not strictly several discrete activities. It may be that an extension of this work--which includes a means of analyzing the process as a sequence of events--would be appropriate and useful as both a data-gathering and pedagogical tool. Orff-certified teachers teaching their best lessons using appropriate Orff-Schulwerk strategies might be recorded and analyzed in order to extract the process that is perceived to be Orff-Schulwerk. These observational analyses might be correlated with Orff specialists' ratings of the lessons in an attempt to isolate variables that are considered critical to good Orff models.

There is a great deal to be done to operationally define the Orff-Schulwerk process. This must be in conjunction with the documentation of activities that occur in classes taught with the process. After the process is documented, it can then be examined for its effect on student outcomes. Given the paucity of documentation of the Orff-Schulwerk process classroom activities and their effects, it is clear that more work is needed in examining this methodology that is widely promoted and used in music education.

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CARLOS CHAVEZ' CURRICULUM FOR TEACHING ORCHESTRAL CONDUCTING

Lewis B. Hilton

Carlos Chavez (1899-1978) was and remains certainly Mexico's preeminent composer, conductor and music educator and one of the most important throughout the world. He conducted virtually every major symphony orchestra worldwide and his compositions have been played and recorded by major orchestras in Europe and the United States. He was director for many years of the National Conservatory in Mexico City and was active in promoting music for young people and the working class throughout his life. One of his many undertakings as a writer was his role as cofounder and editor of the periodical Nuestra Musica (Our Music) which espoused and promoted the cause of contemporary composers of Mexico and elsewhere while also publishing scholarly articles on the works of composers as diverse as Mendelssohn and Jesus Bal Y Gay.

I was fortunate to be invited to his home in Mexico City in the late sixties where he told me about his work on behalf of young talent (especially native Indian) and what should constitute their musical education. Among other items of great value which he gave me was a complete set of Nuestra Musica which had ceased publication because of financial difficulties. In four of these issues was a complete outline and description of his dream of instituting at the Conservatory a curriculum for training future orchestral conductors, an ambition which remained largely unfulfilled. The scope and depth of this course of study he recommended has not been duplicated in any other proposals of which I have knowledge, and certainly nothing so complete has been put into practice anywhere in the world. The brief remarks which follow are a necessarily skimpy outline of the content of his articles. Although some of the recommendations may seem utopian and visionary in the extreme, they can serve as a challenging point of view for all those who are engaged in the teaching of conducting as well as practicing instrumental conductors.

The following pages constitute an attempt to give the salient features of his papers in Nuestra Musica.

INICIACION A LA DIRECCION DE ORQUESTA
(The training of the orchestral conductor) by Carlos Chavez

The proposed curriculum is divided into fifteen sections.

I. Melodic ear training
II. Harmonic ear training
III. Melodic dictation using orchestral instruments
IV. Rhythmic training
V. Rhythmic dictation
VI. Knowledge of orchestral instruments
VII. Study of instrumentation and orchestration
VIII. Formal and thematic knowledge of scores
IX. Harmonic and contrapuntal knowledge of scores
X. Study and practice in the mechanical aspects of conducting
   a. the left hand; b. the beat
   (This section was apparently never published)
XI. Discussion of the psychological aspects of orchestral conducting
XII. Memory training--not published

XIII. Training in musicality--not published
XIV. The emotions and imagination--not published
XV. Interpretation--not published
(I am unable to find these last four sections in any other publication. They are not in Nuestra Musica.)

I. Melodic Ear Training

Chavez suggests that the first five divisions of the curriculum should be started when the student is very young, as young as twelve or thirteen.

The basis for all of the ear training must be the acquisition of perfect pitch. Chavez insisted that the use of movable do or any system of solfege or dictation based on anything less was a complete waste of time and in fact counterproductive. Absolute pitch was to be attained by listening repeatedly to reiterated pitches, starting with A 440, played on any available instrument such as a piano or harmonium, then going methodically to all the other pitches of the chromatic scale and in all registers. Most of this training could be done independently of a classroom situation. Any provision for a reference pitch was to be assiduously avoided. Equally condemned was reliance on tonal materials. Sight singing materials should utilize all twelve pitches of the chromatic scale.

II. Harmonic Ear Training

After pitch recognition and the ability to sing at will any pitch were mastered, the student would progress to listening to simultaneities, first two, then more, with the emphasis again upon absolute pitch. The recognition of intervals was to be insufficient; the student was to be able to name any heard pitches and/or be able to sing any combination of pitches without a reference tone. Chavez acknowledged the difficulty of the task and set no time limit (perhaps years) but he remained confident that, except for the student with very little talent, success would ultimately reward the efforts. Chavez also acknowledged that he had had little success convincing his own faculty at the National Conservatory that the use of such texts as those by Lavignac and Rieman was totally inadequate.

III. Melodic Dictation Using Orchestral Instruments

Again without any reference pitch, the student (in a classroom or similar situation) was to listen to melodies, then simultaneities, played singly by each member of the woodwind, brass, string and pitched percussion families of instruments, then by two in the family, by threes in the same family, etc., by threes in contrasting families, etc. until every permutation had been used. He suggested that a total of seventeen instruments was necessary to complete this aspect of the conductor's ear training, acknowledging the difficulty that the typical conservatory or music department might have in making all this performing personnel available on a regular basis. The availability of the following players was considered necessary: four woodwinds, four brasses, four strings, four pitched percussion and harp. He concluded this section by writing:

> Seventeen instruments will be a completely satisfactory limit, since it will include almost all the different timbres of the orchestra. We would lack only the massed instrument sound of the complete orchestra, something which would be difficult to have available in the classroom [!] But harmonic dictation

such as I have proposed would be an extraordinarily complete introduction to the ear training of the student conductor. (The added exclamation point above is by the translator. It should be noted, of course, that when this was written by Chavez, the ready availability of taped ear training was not known. The proposal would not be early so difficult to meet today.)

IV. Rhythmic Training and V. Rhythmic Dictation

Chavez spends more time on this aspect of the curriculum than any other part, something which will come as no surprise to those who know certain of his scores, especially some of the earlier ones such as the Toccata for Percussion instruments and his Sinfonia India. His starting point, as in the suggestions for developing melodic and harmonic skills, is an absolute, in this case, absolute rhythm. The student must gain the ability, through reiterated listening over an indeterminate time period, to a metronome set at every possible tempo. The result of this study should be the ability to beat any tempo upon demand, e.g. sixty beats per minute, forty beats per minute, etc., with no reference tempo given.

Next, the student should practice changing tempi of his beat, e.g. quarter notes at sixty to quarter notes at eighty-eight etc. Chavez spent considerable time criticizing those critics and teachers who belittle the "simple" ability to bat a totally regular beat at any given time. He takes to task, for example, a critic of Toscannini who suggested that Toscannini's man ability was "simply" to keep a regular tempo. This was the very foundation of Toscannini's great gifts, according to Chavez, and was a talent shared by surprisingly few conductors, including some of the most famous. He cited the unfortunate practice of many conductors who claimed that they "felt" a gradual change in tempo, from 68 to 88, for example, or from allegro to andante, when in fact the score clearly called for an immediate change. The result, according to Chavez, was a muddiness apparent to the orchestra and the audience alike without most knowing what the cause of this inertia was, often blaming the orchestra when in fact it was the fault of the conductor.

Chavez also devoted considerable space to an analytical description of the elements of musical rhythm, using a specialized Spanish vocabulary which is somewhat difficult to translate. He concluded this section of the essay by comparing music without a regular or misurata framework to the mollusk or invertebrate. Music without its rhythmic underpinning, he said, was like the most primitive animal in the evolutionary scale. Music had become misurata in the Baroque period or before but, he suggested, many conductors have themselves remained non misuratas.

VI.

A knowledge of all the orchestral instruments should be gained by study of each of the four orchestral families, plus harp and piano. He stressed the importance of piano study. Continuous practice on these instruments should be maintained throughout the conductor's professional life, having started when he was of grade school age if at all possible.

VII.

Instrumentation and orchestration is as important to the conductor as to the composer, according to Chavez, and their study should parallel that of the composer's except that orchestrations by the conductor could be of others' works rather than his own.

VIII. Formal and Thematic Knowledge of Scores

Formal score study should commence with the student's identifying the larger sections e.g. ABA, then motivic and germinal aspects, and writing identifying marks in his own copies of the scores. Incidentally, according to those who knew him, Chavez continued this practice himself throughout his conducting career, as well as memorizing and marking into the scores the harmonic analysis which he always undertook when learning a new score.

IX. ??

X. Study and practice in the mechanical aspects of conducting
a. the left hand; b. the beat

This section was apparently not published, but he does discuss aspects of physical movement in the sections dealing with rhythm. In the United States, at least, the mechanics of conducting patterns and associated gestures generally occupy a much more prominent place in the conducting curriculum than that assigned by Chavez. Perhaps he felt that it was of less importance than other aspects of training because it could be learned and put into practice relatively readily after the apprentice was thoroughly schooled in musicianship. He does not mention conducting patterns per se, perhaps assuming that they are too well known to need description, but he does spend considerable time on suggestions for developing independence of hands, arms, and other parts of the body. He believed that a study of Jacques-Dalcroze's eurhythmics would be beneficial to the conductor, writing at one point that in this aspect of his training, the conductor enters into the realm of the dance.

He discusses the need for exercises in conducting two to a beat, three to a beat, etc., then three against two, etc., changing from 4/4 to 5/4, from 3/8 to 5/4, from 4/4 andante to 4/4 vivo, from 3/8 presto to 5/4 largo, etc. etc. The duty of the conductor to keep all proportions correct, especially in rubati passages, is discussed. He emphasizes what he felt was the right and duty of the conductor to take great liberties in terms of tempo changes at times, but only after a complete musical understanding of the score.

XI. Discussion of the Psychological Aspects of Orchestral Conducting

In this section, Chavez probably reveals most about himself and some of the reasons why he was celebrated as one of the truly great orchestral conductors.

He begins the section by reminding us that, as conductors, we are dealing first of all with human beings, with all the human frailties and in addition, some special problems peculiar to musicians working in a large group. Each one, he writes, has his personal problems; economic, educational, psychological, professional, etc., and he brings them all to the rehearsal and performance. The orchestral musicians tends to be "centrifugal," tending to distance himself from the group in an effort to maintain his own musical and personal identity. He consciously or unconsciously resents having to sublimate his own musical personality. And he asks himself, "Who is this man, this conductor, who is going to direct me, to order me about, to dispose of me?"

Before the conductor can be to accomplish this role as a musical director, he must find ways to rise above, while remaining sympathetic to, all of these personal problems. Above all, he must not meet frailty with frailty. He must establish an indisputable authority from the very beginning and this can only be based on his total mastery of all the skills of musicianship and conducting. He can not fake it! ("Thank God," says Chavez.)

Furthermore, a dictatorial mien can only lead to disaster. The successful conductor does not order, he convinces. He should always bear in mind that there is a natural equality of interests and roles among the performers and the director. The roles are different, but it is not a question of superior and inferior tasks. The conductor must inevitably have the "concentration of power." This is inherent in his job. His equanimity will be met with equanimity; his ill humor will be returned. The conductor must not expect a psychological paradise in spite of his best efforts. On the contrary, he must learn to stifle his screams of frustration or anger. Ideally, the conductor never loses patience. Difficult, says Chavez, but not impossible.

Many famous conductors have been known for their temper tantrums, hair tearing, leaving the podium in a huff, etc. These acts, Chavez was inclined to dismiss as being theatrics, publicity stunts, and he especially warns the unestablished conductor to eschew any such mannerisms. The famous ones may have a "mattress to cushion the fall" that such antics may cause, but certainly not the unknown one. Instability and neurasthenia on the part of the conductor are to be regarded as obstacles in the way of his success, not means to gaining publicity.

The conductor, master of himself, serene, self assured, firm, will transmit all of these qualities to the orchestra. And he has no chance of having any of these necessary characteristics unless he comes to the podium as a master of his art in every respect. Any attempt at bluff will be recognized as such and lead to inevitable defeat.

"Finally," Chavez wrote, "we must consider the all important factor of constant eye contact, visual communication between the conductor and every member of the orchestra, something which one might assume to be commonplace but is too often lacking."

"In all the orchestras of the world, even in the best, the musicians do not watch the conductor, or at least insufficiently." This may be the result of taking the line of least resistance, of routine or forgetfulness. The musician may believe that he does not need to see, only to hear. But if he performs on the basis of what he hears, he is not following the conductor but the mass or weight of the orchestra which leads to inevitable sloppiness. Each performer must follow only the director.

"By visual communication, and only in this way, is it possible for the director to bring about the conditions which promote clean execution, whether it be attacks, gradual or sudden changes of tempi, proper balance of the various sections of the orchestra, etc. etc., all sina qua non of the conductor's task: to transmit to the musicians his spirit, his emotions, his musical impulses, at each moment of performance."

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INICIACION AL LA DIRECION DE ORQUESTA
Carlos Chavez
PREPARATION OF THE ORCHESTRAL DIRECTOR

Translated by Lewis B. Hylton

General Considerations

The Problems

If the problems involved in reproduction of music-reproduction in the sense of recreation seem multiple and complex when we are dealing with performance on a single instrument, when we consider these problems in terms of an orchestra, they are not just multiplied by the number of performers involved, but the whole nature of the problems changes drastically; in the first instance, the artist who is recreating plays the very music in question on his own instrument; in the second instance, the interpreting, or recreating artist is not performing it, but rather he is governing and giving life to the performance by a group of individuals, who, by this very circumstance, find themselves in a situation sui generis (a unique situation).

When performing in an orchestra, the instrumentalists surrender their primary responsibility, that of interpretation, and allow it to become that of the Director. Therefore he becomes responsible for everything relating to balance, phrasing, and melodic and rhythmic factors. In accepting all these interpretative duties, the director assumes the role of the animator, i.e. the director has been given, as it were, the musical initiative and artistic personalities of the orchestral members. They have, in fact, surrendered them to the conductor.

To handle these responsibilities, the director, in addition to having technical and artistic mastery, must possess still another attribute of a psychological nature which will enable him to dominate and overcome an infinity of complex problems arising from interpersonal relations; the interaction of a group of human beings.

Only the possession by the director of this attribute will give him, in the final analysis, the power of conviction, the indispensable authority to fulfill his function. This authority he must earn by himself and keep it. No one gives it to him or takes it away.

A director is a director, whether he be in politics, a corporate head of philharmonic society, a secretary of state, or, in this case, the director of an orchestra. The indispensable quality of the orchestral director is his ability to demonstrate his leadership capacities before the orchestral body. Only this gives him the authority he needs and therefore the possibility of accomplishing his mission.

At the same time, the conductor must be an educator, a farmer, a sower of seeds, a transmitter. All of his technical skills will be for naught without these qualities.

Thus it is that the orchestral director becomes a teacher when he assumes the role of the conductor i.e. the guide and educator.

The work of the orchestral director furthermore can be viewed as two distinct functions: on the one hand that of analysis, and on the other, of the synthesis of recreation.

The first involves knowledge of the orchestral medium (instruments and their combinations), the development of hearing, the development of the mechanics of conducting; the theoretical knowledge of thematic, melodic, harmonic and instrumental timbres.

The second, that of the synthesis of recreation, depends on his interpretative abilities which, perhaps unconsciously, is a result of all the analytic studies activated by the emotions and imagination of the conductor.

Having become aware of all these problems, the inevitable question occurs: how does one go about solving these problems? Is there some method of preparing to meet them? If there is, what form does it take? How does one resolve the theoretical and practical problems i.e. up to what point must the aspiring director prepare himself before taking on the director's role?

Here then are the problems of preparing the director, problems which must be surmounted in such an institution as the National Conservatory by means of specialized and advanced studies.

The Education of the Orchestral Director

Is it possible and necessary to teach methodically the skills of orchestral conducting?

The answer is yes. It is absolutely essential that this be done. The more complex and difficult the materials are, the more essential it is that the student subject himself to a methodical preparation.

And while it is perfectly possible to acquire such an education, it is obviously difficult and costly.

It should always be remembered that the study of conducting, as any other musical skill, can only serve to improve the innate abilities of the student. No one can give to the student a talent which he does not naturally possess.

Given the great complexity of the functions of the conductor, the specialized studies will be of enormous benefit even to the student with great natural talent, since he will, as a result, be able to develop more quickly and effectively his innate faculties.

Yet up to now, little has been done in this area, the teaching of conducting.

In general, one can say that the conductor's art has been considered a private education for the very few, perhaps owing precisely to the difficult of the very problems involved.

In Berlioz' treatise, Instrumentation and Orchestration, there is an appendix entitled "the orchestral director, the theory in his art." Here we find an excellent discussion of many of the general problems of the artistic responsibilities of the conductor; excellent advice on some concrete problems, and even the exposition of certain principles of baton techniques.

Wagner wrote a little text entitled On Conducting, and Felix Weingartner another, entitled On the Art of Conducting.

These last two little works are of great historical interest. In reality, they touch on differing and very personal points of view regarding interpretation to give to certain works as well as justified expressions of sorrow concerning transgressions committed by other conductors in the direction of both classical and modern scores.

But no one has taken up the problem of how to resolve methodically the manifold problems involved until the work of Hermann Scherchen which was published in Germany in 1929 and works (cited by Scherchen) by Georg Schuneman "Handbook of Conducting," and Cahn-Sperer "Manual of Conducting." (Scherchen, Hermann "Handbook of Conducting" translated from the German by M. D. Calvocaroessi, Oxford University Press, London: Humphrey Milford, first impression July 1933, second impression August 1935.)

The work by Scherchen is of great interest. It establishes the need for specific study of orchestral direction and for theoretical knowledge before practice in actual conducting. He gives some precise suggestions, although they are not detailed or systematic in respect to how a curriculum should be set up, and arrives at a somewhat curious conclusion: "I have taught some students who were able to demonstrate when first appearing before an orchestra, the ability to conduct a major orchestral work cleanly and intelligently without one single rehearsal."

Apart from some doubt as to the credibility of Scherchen's statement, I do not believe that this idea (of a conductor's preparation) should be regarded as the desideratum since the implication seems to be that theory and practice should be separated for a long time, a circumstance which, as well shall see a bit later, is not likely to bring about good results.

Some conservatories and university music departments in the United States have established special curricula for the conductor, but neither Scherchen's publication or the curricula in these schools in United States has resulted in a truly systematic or complete solution to the problem.

Paul Taffanel, a professor at the Paris Conservatory, asks a question worthy of our consideration. "Is it possible to teach the art of conducting?"

For a number of years this has been a question seriously considered by a number of interested artists who have hoped to create an orchestral direction class at the Conservatory.

It may not be a cause for great regret that this plan has not yet been realized because the results could be highly problematical.

Where, then, are to be found the correct precepts of this art? Which conductor feels sufficiently certain of his ability to teach clearly and efficaciously the infinity of skills which go into the interpretation of a musical work?

To master an instrument, to surmount the difficulties in instrumental performance, it is essential to practice constantly. There is the same need for practice for the conductor. And here we encounter a veritable paradox. Since it is manifestly impossible to have an orchestra always available on which conducting students can experiment in order to learn the complex art of conducting.

How is it possible, for example, to inculcate in students the qualities of *sang froid*, the presence of mind, so necessary when confronting a dangerous situation, a threat of imminent disaster, which the director will face from time to time?

These qualities, assuming that the student has them, will only be manifested at the actual occurrence of the situation and can not be produced at will.

How can we teach the multitude of complex gestures which must be learned, gestures which may only last for the wink of an eye and yet which have a very precise meaning, which are in fact, the very language of the conductor, but which are ineffective without their skillful use, and whose efficiency and value can not be realized without experimentation on a live orchestra?

What orchestra will submit itself to endless repetition of such and such a gesture by the apprentice conductor?

The obstacles confronting such a learning situation are innumerable, and, up to now, no conservatory or music school has tried to institute such a curriculum.

Moreover, it is true that none of the great conductors have been the beneficiaries of such an apprenticeship. Using the theoretical skills they have already acquired, they have owed their conducting skills only to two essential factors: their natural gifts and practice. (Lavignac, Albert and Laurence Lionel "Encyclopedia de la Musique et Dictionnaire du

Conservatoire" Libraire Delagrave, Paris, 1929 (translator's note--it is not clear from the Spanish text where this quotation begins or if there is a quotation.)

The remarks by Taffanel are very interesting and deserve our attention since they represent a point of view very widely held and deserve comment.

Since this is the case, let us examine them. To say that a discipline can not be taught because it is difficult and complex is a pessimistic and self defeating point of view. The complex art and science of surgery would then logically be unteachable.

If the material is difficult and complicated, so much more is the need to teach it, to systematize it, although clearly the pedagogy will be correlatively difficult and complicated.

There is no reason to deny the possibility of teaching of conducting just because the precepts of this art seemingly do not exist.

Since a formulated and systematized description of the art does not exist, it is clear that we must start by studying and analyzing its precepts in order eventually to formulate and systematize them.

Since practice is the decisive factor in learning conducting, it is evident that the theoretical aspects must be of less importance. [sic] Consequently, if the conductor arrives at his practice having already mastered the fundamental theoretical aspects of his art, he will be in a much more favorable position.

Yet there are many practical exercises which can be carried out without being in front of a full orchestra, but perhaps only a small ensemble. There is no reason to deprive the apprentice conductor of very useful experiences which he can have alone or under relatively easily obtainable conditions.

How about the question of *sang froid*? Certainly this can not be taught, at least not directly. But will not the prior study of theory, the experience of preliminary exercises which are possible, contribute to the student's feelings of security, his aplomb, his *sang froid*?

This is obviously true. The orchestral director, like the surgeon, needs aplomb, sang froid, and therein lies the reason for providing him with all the preparatory experiences possible. It is certainly no reason to deprive him of them.

It is true that none of today's orchestral directors have emerged from orchestral conducting classes. This is not proof that such classes are unnecessary; what it does prove is that the classes have not existed and, for better or worse, today's conductors are experience oriented; not the best possible, but in reality, the best there is at this time.

No one can deny that the most talented of conductors would benefit from specialized preparation and study.

The curriculum for the orchestral conductor should, as that of any other, be aimed at strengthening, encouraging and developing his natural gifts, and to facilitate and accelerate their development. This is the quality of a true education in any discipline. It will benefit equally the average, the below average and the exceptional student.

But in no instance can educational experiences of any kind provide a student with a natural talent which he lacks, as I have said before.

I believe that our Conservatory should attempt to strike out on its own, but utilizing all the experiences acquired by other establishments and teachers from other countries as much as possible in seeking to resolve this problem of world wide concern, but whose resolution up to now has not been the beneficiary of much concerted effort.

We must experiment and make use of all the elements which we can muster for a solution.

The studies and suggestions presented here do not, naturally, pretend to solve all the problems of complete systematization of the teaching of orchestral conducting; they only are offered as one more contribution to the study of this very important but unexplored problem.

Outline of Studies

The curriculum for the aspiring orchestral conductor ought to include the following subjects:

I. Melodic ear training
II. Harmonic ear training
III. Melodic dictation using orchestral instruments
IV. Rhythmic training
V. Rhythmic dictation
VI. Knowledge of orchestral instruments
VII. Study of instrumentation and orchestration

- VIII. Formal and thematic knowledge of scores
- IX. Harmonic and contrapuntal knowledge of scores
- X. Study and practice in the mechanical aspects of conducting
  a. the left hand; b. the beat
  (not published)
- XI. Discussion of the psychological aspects of orchestral conducting
- XII. Memory training--not published
- XIII. Training in musicality--not published
- XIV. The emotions and imagination--not published
- XV. Interpretation--not published

I. Melodic Ear Training

This must be composed of a systematic and sequential series of studies which I will discuss below.

The first step will be the fixation in the ear i.e. the acquisition of absolute pitch.

Absolute pitch is the ability to identify immediately a pitch i.e. to be able to name a heard note.

The importance of this ability should need no explanation. It is a necessity easily understood.

Very well. How does one attain this essential skill?

The answer is very simple: one learns to recognize pitches in only one way, by listening to them.

Pitches become fixed in the ear as the result of frequent and reiterated listening.

First using the most common instruments, a piano or an organ, and later strings, woodwinds, brasses, the student must listen to, and then, sing a given pitch, for example an A given repeatedly, three or four sessions a day. It is a task which can be done in class or individually without taking away from any of his other studies.

He should work on the same pitch for one or two weeks and then go to each of the other eleven tones of the chromatic scale, working on each in the same way. He should repeat the entire exercise as necessary.

At the same time the student is working on developing absolute pitch, he should also listen to and sing melodic sequences of various intervals using all of the intervals of the chromatic scale (from the minor second to the major tenth) [sic].

These studies should take place, let us say, in the first year, before solfege and dictation is started. It is a serious mistake and venerable error to start solfege and dictation without having already developed absolute pitch and without having experience in singing the pitches he hears. Without these--absolute pitch development and singing ability--the others--solfege and dictation--will be a lost cause.

In the second year, the following goals should be pursued:

a. He should be able to sing individual pitches, or a series which are asked of him by name, or by reading them from music manuscript with no reference pitch being given. Only this can properly be called solfege, and

b. He should be able to recognize and write any individual pitches or any series of pitches which he hears. This, then, is dictation, properly speaking.

In this same second year the student will already have in fact started his melodic solfege and dictation training which he should continue, as from the beginning, using the twelve tone scale.

This we can call the study of absolute intervals, one step beyond the development of absolute pitch.

According to the innate ability of the student, he will obtain desirable results quickly or ore slowly; but except in the case of a lost cause and a complete lack of natural talent, good results will always be obtained if training is started in childhood and not abandoned later on.

It must be remembered that I have been talking about the use of the twelve tone scale. The studies which I will discuss, all, in reality, are based on solfege and dictation using all twelve tones. This is the only effective method. Dictation and solfege based on the diatonic scale is totally inadequate. In some ways it really harmful because the student becomes accustomed to relating his pitches to tonal functions, as we often see, so that he can only sight sing so long as he has a tonic center. As soon as the tonic center is not apparent, he loses all ability to sight sing.

No doubt there will be many critics of these comments by those who make use of tonal solfege which is traditional in such texts as those by Lavignac and

Riemann and which has been used in our own conservatory.

Years ago, when I was its director, I sought to change all this but failed because I was not able to convince the teachers that it was urgent and absolutely essential. Essential because in using tonal solfege, the student never develops absolute intervalization, or even absolute pitch. And without these abilities, the directors and performers are fighting against great odds.

It should be understood that this kind of ear training, indispensable as it is to the conductor, is not needed only by him. Quite the contrary. If I am talking about only the musical education of the conductor, it is because, unhappily, no such training is yet to be found in our Conservatory, and so far as I know, not in any other.

The study of solfege for all students of the conservatory should have the kind of training I have discussed in which case one can assume that the conducting student, when he enters conducting class, will have been properly prepared.

II. Harmonic Ear Training

This should also be part of the regular curriculum of the conservatory. Having mastered the skills described above, the student will next convert melodic intervals to simultaneities.

Later, having mastered all the simple intervals i.e. of two pitches, he will progress to simultaneities of two intervals, three, four, etc.

It must be understood that it is not a question of dealing with the science of harmony nor with any technical aspects or their practical applications.

We are dealing only with one question, that of hearing, and the fixation and recognition of any interval, by sound alone.

III. Orchestral Dictation

This should consist of the same kind of dictation training already discussed but done with all the instruments which comprise the symphonic orchestra. For this reason we can call it orchestral. Instrumental dictation is with any instruments; orchestral is with just the instruments of the orchestra.

We are discussing a special music education now, for the orchestral conducting student, which is based on the assumption that he has already acquired a melodic and harmonic background as described above.

The specific goal of this part of the conductor's preparation is to relate intonation (or pitch) with timbre.

Just as it is necessary for him to be able to recognize any pitch, so he must be systematically trained to recognize various timbres, at any pitch level.

The curriculum must include first a development of absolute timbre recognition i.e. all students must listen to each orchestral instrument in all ranges of its tessitura until he is totally familiar with the particular timbre of each instrument.

The second step in the course of study will consist of having the students listen to the same pitch played by various instruments.

During this comparative timbre study, the student will begin to fix in his memory the particularities of timbre, to be able to distinguish not only the differences of the same pitch produced by two instruments of different families but of comparable tessitura, for example, violin and clarinet, but of instruments of the same family but in different pitch ranges, i.e. low pitched violin sounds, high pitches of the contra bass which may be unisons.

The third part of the curriculum will consist of melodic dictation by single instruments, progressing from instrument to instrument through the timbres of the symphonic orchestra.

The fourth part will be the summit reached through all the earlier studies: harmonic dictation presented by all instruments of the orchestra.

This should be undertaken in the following manner:

Orchestral Harmonic Dictation

I.

With two equal instruments
With three equal instruments
With four equal instruments
(Until all of the instruments have been included)

II.

With two different instruments of the same family
With three different instruments of the same family
With four different instruments of the same family
(etc.)

III.

With two instruments of different families
With three instruments of different families
With four instruments of different families
(woodwinds, brass, strings, percussion, harp)

IV.

2 strings and 2 woodwinds (total of four)
3 strings and 3 woodwinds (total of six)
4 strings and 4 woodwinds (total of eight)
(use a mix of all possible combinations)

V.

2 strings, 2 woodwinds and 2 brasses (total of six)
3 strings, 3 woodwinds and 3 brasses (total of nine)
4 strings, 4 woodwinds and 4 brasses (total of twelve) (all permutations)

VI.

2 strings, 2 woodwinds, 2 brasses, 2 percussion (total of eight)
3 strings, 3 woodwinds, 3 brasses, 3 percussion (total of twelve)
4 strings, 4 woodwinds, 4 brasses, 4 percussion (total of sixteen)
4 strings, 4 woodwinds, 4 brasses, 4 percussion and harp (total of seventeen)

Seventeen instruments will be eminently satisfactory since it includes almost all of the various instrumental timbres of the orchestra.

At this point only the orchestra *en masse* will be lacking, something which can not easily be remedied in the classroom situation.

But the harmonic dictation described would be an extraordinarily complete initiation into conducting studies. The more arduous and complex listening tasks which the director will confront will have been basically mastered.

IV. Rhythmic Education

[Translator's note: The vocabulary used by Chavez in this paper seems so specialized that the Spanish words are included here with an approximate English equivalent.]

In order to avoid possible confusion due to different meanings attached to certain terms used in this section, I shall begin by offering a series of definitions:

(ritmo) Rhythm--From the Greek fluir [sic] is a quality which music possesses by virtue of natural periodic accents

(simetria) (literally: con medida) measured, with (medida) even mensuration

(compas) Accent patterns which are divisible into equal parts or (medidu) rhythmic unit(s) called (tiempos iguales) equal or symmetrical parts, each of which has only one (tiempo fuerte) strong accent

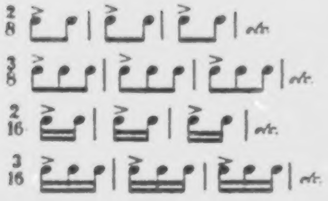
(tiemp fuerte) A strong accent. (Accento metrico) is the natural occurrence of the strong accent on the first note after the bar line. It can also be called the natural accent, rhythmic accent or prosodic accent.

(accento metrico) Metric accent is the natural accentuation of the first note after a bar lie; it can also be called (acento natural) natural accent, or (acento prosodico) prosodic accent or natural accent.

(tiempo semifuerte) The half accent is that point in a musical phrase or unit where a natural accent of less strength (menor fuerza) falls. A tiempo semifuerte only appears immediately after a group of two or three tiempos which had a (tiempo fuerte) strong accent(s) [Translator's note: This appears to be a typographical error in the Spanish text and perhaps means a group of two or more tiempo fuertes appear only after a tiempo fuerte.]

(tempo) movement speed (lento, moderato or vivo) of (tiempos) elements in the (compas) measure or rhythmic section

(Compas Simple) Simple mensuration or time where there is not more than one (Acento Natural) Natural Accent or (Tiempo Fuerte) strong accent per rhythmic unit.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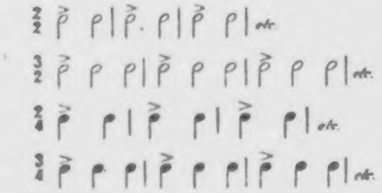
3/8
2/16
3/16
etc.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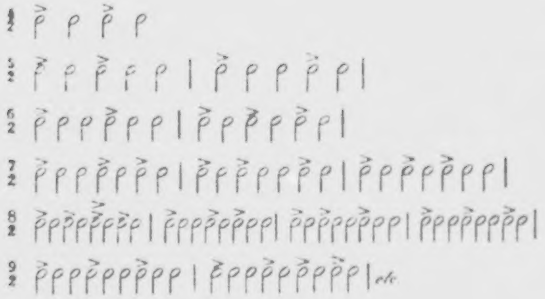
etc.

(Compas compuesto) Compound Time consists in the occurrence of one (Tiempo Fuerte) strong accent and one or more (Tiempos Semifuertes) weak accents.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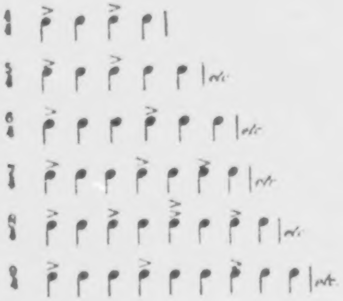
etc.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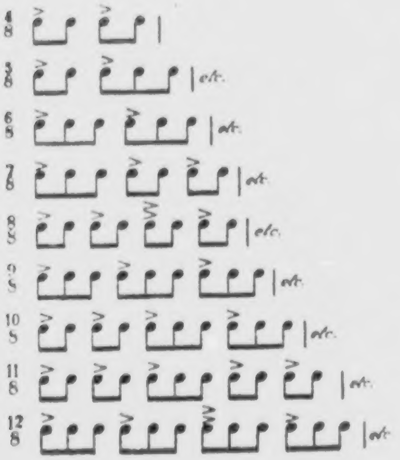
etc.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7/8
8/8
9/8
10/8
11/8
12/8
etc.

Since symmetry is the foundation of rhythm, existing in (tiempos medidos) pulsations of equal importance or duration in the (tiempo) rhythmic unit, the ability of a musician to (medir) beat equal (tiempos) beats or time or time divisions, and his ability for gauging (tiempos iguales) equal time units is basic to his fundamental aptitude and ability rhythmically speaking.

(Sentida de la Simetria) Sense or feeling of symmetry--rhythm is to music as the skeleton is to a living organism. Music of (no Medida) no rhythmic pulsation or (mal medida) poorly accented is like an invertebrate, while (musica medida) properly accented is like a vertebrate.

Precisely the same significance that zoological evolution has where the mollusk evolved to the vertebrate, we should attach to musical evolution where music evolution where music developed and established a rhythmic organization which is based (en el compas) on the rhythmic phrase

(El Compas) is the unit of measurement in music which, divided into (Tiempos Iguales) equal rhythmic groupings, contain only one (fuerte) strong accent or (un solo tiempo con acento prosodico) one group with the prosodic or natural accent.

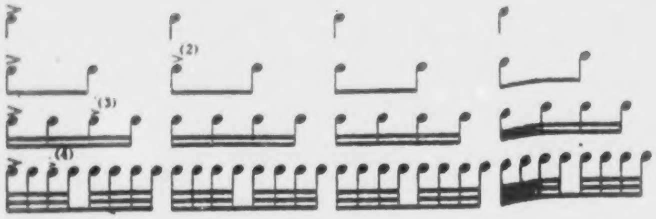
The establishment and the recognition of the (acentos iguales) and the recognition and knowledge of the (acentos regularmente colocados sobre ellos) accents regularly placed on them will be the means by which it becomes possible to make of music a rhythmic art, i.e. an art governed by the principles of symmetry in (el tiempo) time or movement.

Rhythm, musically speaking, is the symmetry of accentuation in the same way that symmetry in space is created in (la plastica) statuary or plastique in dance.

(El Ritmo Musical) musical rhythm in its most basic and precise meaning is to be found in the existence of (Tiempos Simetricos) symmetrical accentuation (con medida regular) with regular accentuation.

[Translator's note: The word correct or proper could be perhaps substituted for regular.]

In the same manner that the (Compas Unidad 1/1) unity of the measure is divided into (tiempos iguales) equal units, these are subdivided into equal fractions of the (tiempo) time unit in which are to be accents of regressive importance. The accent in (2) is less important than in (1), in (3) less than in (2), in (4) less than in (3); and so forth.



There are three aspects of rhythmic education. The first is the development of the (sentido de la simetria) sense of symmetry; the second is the acquisition of the feeling or notion of (duracion absoluta) absolute duration; and the third is the development of the ability to change from one tempo to another, from one rhythmic design to another i.e. rhythmic versatility. We shall be discussing each of these aspects.

I remember some years ago shortly after Toscanini had been appointed director of the New York Philharmonic, before his exceptional conducting talents were widely recognized, a writer (perhaps) distinguished (I do not recall if he was a music specialist) wrote an article in the American Mercury which denigrated Toscanini's ability. The writer concluded that Toscanini had only an astonishing ability to beat regular time. It appears that this opinion would be dismissed as worthless if it did not correspond to a widely held and mistaken notion which I must try to set right. This faculty which was observed in Toscanini as a defect is the very basis for his prodigious conducting talent. A musical structure can only be built if it has a foundation of this very rhythmic quality. Music then has unity and cohesion.

Great classical composers since Bach and especially since Beethoven have abandoned musica non misurata but, unfortunately, conductors themselves remain non misuratas.

Based on the unlimited liberty which everyone believes he has, the orchestral director with impunity conducts with an erratic beat. Yes, the orchestral director has the right to interpret, but only within the correct rhythmic relationships or proportions. He can phrase with his baton, that is, yield at the right moment; he can bring about changes of tempi such as accelerandi and rallentandi as indicated but he must keep the correct relationships of notes to each other.

One would think that beating four equal beats, only that, four equal beats, would be the most common and obvious thing to do. But it is not so.

I have had the opportunity of observing this among both beginners and experienced conductors. And if it is difficult to maintain accuracy for just four beats, what will happen when it is a matter of a period, or a whole piece? The most common occurrence is a constant movement of accelerando, or ritardando, or both.

If, to the lack of feeling for eveness or symmetry on the part of the conductor, one adds the weight of the orchestra (something which I shall discuss more later), it is obvious that there is a great danger that correct rhythmic execution will be lacking.

It is not necessary that there be gross differences in duration between each tempo to bring about disastrous results. Just the most insignificant tempo fluctuations are enough to destroy rhythmic symmetry.

Immediately, the music weakens; it weakens without the majority of listeners knowing why. It lacks clarity, smoothness, articulation; it takes on a certain vagueness, muddiness, that the average listener can barely perceive consciously and does not know what the problem is; it is likely that he will blame the orchestra.

It is impossible that ninety to one hundred musicians in the orchestra would not respond to this vagueness.

Each one catches the beat as well as he can and his playing reflects the uncertainty of the conductor's beat.

One can only hope that future conductors will know that they have the liberty, the right, even the necessity, to know how to change tempi; to know how to make, in some cases, the most capricious rubati; to accelerate and ritard the tempi when it is suitable.

But the director must know that all these changes can be made only after he has totally mastered his skill in symmetry and rhythmic relationships; only then, not before.

The acquisition of this mastery is not more or less difficult than the attainment of any other of the conductor's skills. It is a question of practice.

The student must practice daily various exercises: (a) counting out loud; (b) moving one hand; (c) moving both; (d) moving one forearm; (e) moving both; (f) moving one whole arm; (g) moving both. All this must be done rhythmically, attempting always to maintain the exact tempo over a longer and longer period of time. The exercise should be started with a metronome and, after a length of time, rechecked against the metronome.

It is tedious work which requires patience, concentration and a high level of dedication.

Later, when the future conductor starts exercises with the baton, he should imagine himself in front of an orchestra and at the proper time in his studies (as we shall see), he should continue his tempo exercises daily in as varied a manner as possible i.e. beating a great variety of meters, with various kinds of beat patterns with hands and arms, and in different tempi.

Absolute Rhythm

This is the equivalent of absolute pitch. it consists of the absolute memory for any given tempo in fractions of a minute. The conductor must be able to use from memory the metronomic scale as follows:

1/40 1/42 1/44 1/46 1/48 1/50 1/52 1/54 etc.

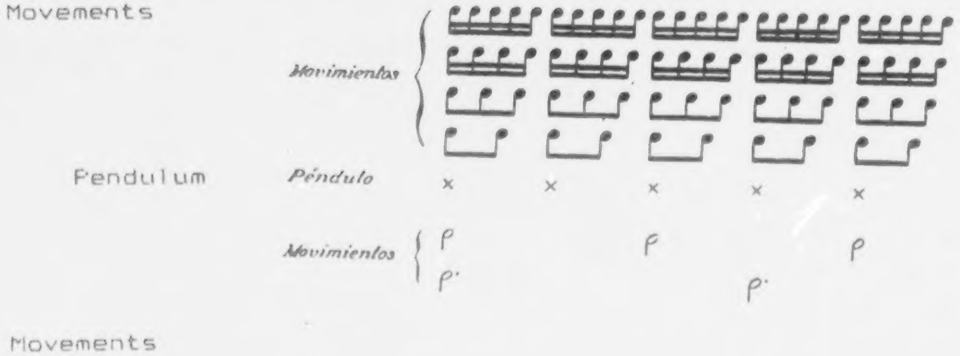
In order to attain this sense of absolute rhythm or tempo, he should proceed in the same manner as he did in mastering absolute pitch: he must fix in his mind absolute tempo by listening in order to become capable both of recognizing any beat tempo or producing it. He must work constantly, by sight and sound, watching and listening to a clock pendulum to fix in his mind the feeling for 1/60th of a minute i.e. one second.

Similarly, he must memorize all the tempi by proceeding methodically, one after another.

With the aid of a metronome or any pendulum whose tempi can be calibrated and controlled, he must spend an entire week on each tempo.

While listening to each beat of the pendulum, the student should follow precisely with various exercises: counting, beating with a finger on a table, moving a hand, walking, doing rhythmic calisthenics of all kinds.

All these strokes should be simple, double, triple, quadruple i.e. one, two, three, etc. strokes per pendulum beat:



In all these exercises which should be thought of as an integral rhythmic education of the body (voice, hands, arms, legs and other parts of the body, singly or in combination), the rhythmic exercises of Jacques-Dalcroze can play a significant role.

At this point, the orchestral director enters the realm of dance. He must master a real eurhythmia. He should have all movements under total control and be able to control separately and together all rhythms with all varieties of force, speed and duration.

For example: in Dalcroze eurhythmics, the goal is to develop the ability for moving arms and legs to a different rhythm, to move one arm smoothly and without force while the other moves forcibly and extensively, etc. etc.

By means of a similar method, although not as extensive as Dalcroze's, the conducting student should finally have: a complete rhythmic education of all and each part of his body, coordination of two or more parts, and an absolute sense of tempo and duration.

Rhythmic Versatility

Just as he must train himself to become a master of symmetry, the student must attain the ability to change from one movement to another, from one beat to another, one rhythmic pattern to another.

Having obtained absolute rhythm, the exercise involving sudden tempo changes will be relatively easy.

How often, even on the part of celebrated conductors, is displayed a regrettable ineptitude in this respect.

If the music goes from a Tempo Moderator to a sudden Presto, the conductor will start a faster beat but only little by little, in the course of six or eight beats, will he attain the Presto tempo. Why does he not beat Presto where it is indicated?

Probably, if he is asked, he will say "Because that is the way I feel it." But the truth will be something else. It will in all probability be because he can not change tempi suddenly.

The student must practice sudden changes in front of his imaginary orchestra, preceding according to a table of changes representing an almost exhaustive list of possible permutations and combinations, e.g.

60-72; 60-80; 60-84; 60-88; 60-92; etc.
60-58; 60-56; 60-54; 60-52; 60-50; etc.

and then precedes to substitutions of the base sixty each of the other metronomic markings.

From this point, the student must progress to the equally important study of Rallentandi in the following manner:

Move from ♪=116 to ♪=60 in the course of one beat, two beats, three beats, four beats, etc.

Then he will precede to various aspects of tempo changes such as accelerando. Having mastered tempo changes, the student then should go to beat pattern changes as follows:

a. Change beat without changing temp
b. Change beat and tempo simultaneously.

For example:

a. Andante 4/4/ to 3/4; 5/4 to 2/4;
b. Andante 4/4 to Vivo 5/8;
c. Moderato 3/4 to ? etc.

Continuing the development of rhythmic versatility, the student should study the most varied rhythmic changes: changes of tempo, of beat and notation at the same time.

He should start by studying notation changes i.e. the most varied kinds of notation and especially rests of different duration. In this case, the student should beat the pattern while following in his mind or singing (preferably the latter) these notation patterns.

Then he will proceed in the same manner with a study of notation and with a study of changes of notation and meter, e.g. "Dance of the Elegidas" in Rites of Spring of Stravinsky.

Finally, changes of notation, of meter and tempo in exercises especially devised for this purpose.

Still missing, in finalizing the rhythmic education of the conductor is a rhythmic dictation, which we will now discuss.

This is complementary to the study of melodic and harmonic dictation discussed above.

The student must be certain of his knowledge of all the rhythmic education discussed above. He must know: (a) metronomic tempi; (b) beat patterns; (c) rhythmic notation. Learning the material in this last section depends on his mastery of all the material above.

All rhythmic studies previously discussed must have been commenced at a very early age: from the time he enters the conservatory i.e. at the end of his sixth year in elementary school.

One can be certain that three years of assiduous study will produce astonishing results. Before even encountering an orchestra, he will have gradually but surely acquired the skills and control he will need to lead one.

VI. Knowledge of Each Orchestral Instrument

No one doubts the need for the orchestral director's study of orchestral instruments; it should include study on an instrument of each of the instrumental groups: strings, woodwinds, brasses and percussion.

I would add that piano study is of enormous importance.

In a well organized curriculum, the student should begin the study of these five instruments at about the same time. The first year should include two of the instruments and the second year the other three; after that, all five should be studied simultaneously until the student has attained at least an intermediate skill; he should always continue practicing them from time to time.

VII. The Study of Instrumentation and Orchestration

With the instrumental study discussed above, started in the early years, the fourth year of his study should include formal studies of instrumentation and orchestration, using any or several of the excellent and numerous works on this subject.

It is as important for the conductor as for the composer to excel in this discipline, but substituting his arrangements of works by other composers and for other instruments for original compositions.

In orchestral studies, the student director will start to overcome one of the specific problems of the orchestral director: orchestral equilibrium, i.e. the establishment of the proper balance between the various individuals and sections of the orchestra.

In studying orchestration he will confront the problems theoretically. He is preparing himself to meet and solve the problems of balancing sonorities.

It is at this point that his prior studies in all the educational aspects discussed start to come together. Orchestration knowledge combined with a trained ear, rhythmic education and mastery of the physical aspects of conducting will prepare him at last to confront the reality of a live orchestra.

VIII. Formal and Theoretical Knowledge of the Score

From the first year, the student will have studied elementary music theory and from the second year, more advanced theory i.e. harmony, counterpoint, fugue and forms.

In the fourth year, score analysis is undertaken.

He should start by identifying the motifs that are the bases for each theme, then the themes that make up each section, then the sections which make up a movement, noting in each case the motivitic and thematic elements used in all their details and as they are developed, varied or modified.

Finally he should make a detailed written description or schema of the thematic and formal structure of each work, notating ont he score itself the particulars of his analysis.

IX. Harmonic and Contrapuntal Knowledge of the Score

Having completed a thematic and formal score analysis, the student then turns to a harmonic and contrapuntal analysis. He will first write the chord identification and its function.

With the chord analysis available, the student will construct a diagram of the entire work and finally, he will add this to the thematic analysis so that he has a clear concept of the whole work.

Also at this point, the student, having made the analysis, will begin to have a sense of synthesis. The teacher must orient the student in this regard, helping him gain the sense of aesthetic unity of the work by means of bringing together all of its formal, harmonic, contrapuntal and pitch elements, which really means the orchestral work viewed in its totality.

X. (Not Published)

XI. Discussion of the Psychology of Orchestral Conducting

In the introductory section of this paper, I said that in addition to technical and artistic capacities, the orchestral conductor must have another attribute, a psychological make up that will enable him to manage, to dominate and overcome the various problems of human relations.

We must first bear in mind that, above all, the director is leading a large group of human beings; each one has his own characteristics, each one has his own personal problems, some emotional, some economic; each one has a good or bad but different education, good or bad, character, good or bad instruction, good or bad behavioral characteristics. And each one has his self esteem, or vanity, more or less elevated but certainly not always in a correct relation to his musical abilities.

Moreover, the orchestral musician is generally centrifugal; he tends to draw away, to distance himself mentally from the group, not only because of a natural impulse to follow the line of least resistance, but because of a sincere but unconscious individualistic impulse.

On the other hand, the musician is aware that he is only a little cell of the large group he can easily lose an awareness of his own personality, in a kind of underestimation of his relationship to the group, i.e. to play alone, as a soloist, a musician knows that the results, good or bad, depend exclusively on him; that is not the case when he is only one of the hundred playing.

There may also be economic factors which have particular influence on the psychology of the orchestral musician: a famous conductor said to me once, "It doesn't matter whether orchestral musicians get high or low salaries because they will always believe that they are underpaid."

I believe that the musicians are correct, just as are any other artists (not to mention composers), because we live in an economic and social environment which has not yet raised artist to an economic level which they deserve [and all are therefore underpaid].

Finally, I want to review briefly the general psychological characteristics of the musician, attitudes typical of the orchestral musician everywhere. The musician resents, unconsciously, automatically, the very directorship of the director, of any director. The musician thinks, perhaps without realizing it, although often very consciously: "Who is this man who has come to direct me, to order me about, to dispose of me?"

This, in a few words, is the framework of the mental attitude of the musician, which, generally speaking, prevails quite normally in orchestras, and which makes up the psychological problems confronting the conductor and upon whose solution depends totally the musical outcome.

The solution depends on just one factor: the conductor must establish an unquestioning authority over the musicians; and that must be established by his own personal capacities and characteristics.

There is only one way that this can be brought about, to establish his authority: he must convince the musicians from the beginning that he knows what he is doing; that he produces an ambiance of cooperation and work.

It is a great error on the part of many directors to adopt a dictatorial demeanor, an error which can only bring about the worst consequences: the musicians resent him and perform with little enthusiasm.

The director ought not give orders, but convince, reasonably. Only in this way can he avoid establishing the mistaken and unfortunate situation of superior and inferior between himself and the musicians.

In this manner, the director will establish the correct climate, the only appropriate one, which is to make everyone feel that all of us together, without exception, are united to reach one goal: to serve music best.

In reality, in the orchestral ensemble, no one is inferior or superior; there is a natural quality. There are differences in function, and those of the director are usually the most arduous and complex, but there are really no different hierarchies.

The natural concentration power in the conductor is precisely what makes his attitude a decisive factor; the bad humor of the conductor produces a bad humor and resentment on the part of the musicians; his good humor and cordiality produce identical sentiments among the musicians.

And so it is, in order to direct, in order to bring about the supreme goal of the conductor (which is and must be only to realize magnificent and vibrant musical performance), he must not only control and unite the strictly musical elements which are necessary for success, but with equal aptitude and skill, successfully reconcile the variety and dissimilarity of the human factors which are to be found in the ensemble.

Just as it is certain that if a conductor does not demand perfection in musical matters that are incumbent on him that he will fail, so is it equally certain that he will fail (although this is not generally realized) if he can not control the psychological factors which I have discussed.

On the other hand, do not think that I envision a paradise of mutual understanding between the conductor and the musicians as a sina qua non of a situation that will bring about good results. No, the reality is not this paradise, unfortunately, but it should be the goal.

Reality, many times, even in the best of cases, is far from being the most desirable situation. How many times the conductor must stifle a scream and pull himself back together(!)

But this is only the inevitable and (necessarily) acceptable consequence of the imperfections of human nature; of its frailties and mood swings. But one should never accept this reality as unmeliorable.

Although it is reality, it should be viewed as something to be improved. Strictly speaking, the conductor should never lose his patience; he should never respond to the frailty of a musician with some of his own.

That is quite difficult but not impossible.

Many great and famous conductors are also well known for their bad dispositions. But one should not view these excesses of impatience as a rule but an exception. And, on the other hand, I am inclined to the belief that much of that behavior is calculated as a publicity stunt, a topic of conversation, a theatrical impersonation, e.g. tearing on one's clothing, shouting, leaving the rehearsal or concert in a temper tantrum because a musician made a mistake.

But while it is certain that these scenes are memorable, we must not consider them the rule instead of the exception. Moreover, these are luxuries that great masters can grant themselves, something not possible for the unestablished conductor. The fame of the well established is enough of a mattress to cushion what would otherwise be a disaster.

We must always bear in mind that neurasthenia or simple frequent instability is always a part of the orchestral scene, a disturbing element of prime importance.

We must never forget that the preparation and performance of a piece of music is a laborious work which requires concentration, a favorable attitude and love of the work and that these conditions can not be obtained by a furious and dictatorial conductor screaming at the orchestra. The negative attitude of a director is transmitted immediately to the musicians.

A positive attitude is equally transmitted. And it is precisely this power, many dimensional, automatic and absolute which constitutes the psychological means whereby the conductor truly directs an orchestra.

By his own dedication to the work, the conductor can seek to combat boredom and disinterest that routine can instill in the musicians. Only with a friendly demeanor will he get sincere cooperation and only in this kind of constructive environment, a demonstrated love of music and conscientious workmanship, will he be able to scale the heights of musical expression.

The level of an orchestra's performance is not automatically achieved, but the quality of performance is relative to these qualities of the conductor.

The self possessed director, serene, certain, firm, will transmit all these qualities to his orchestra and equally true, the orchestra will not have the qualities if the conductor lacks them.

It goes without saying that the director can only have these qualities of serenity, security and firmness when he is on top of his art and when he has complete mastery of the conducting skills.

Because you can not fake it in the realm of art, thank goodness, and firmness that is not based on talent and knowledge is only bluff.

Finally, I want to discuss a skill of great power for the conductor: visual communication between the director and members of the orchestra.

It is a communicative device of obvious practical and psychological value.

It might seem that it is so obvious that it would not have to be discussed at all, but this is not the case. It is one of many truisms which is not always remembered.

In all the orchestras of the world, even the greatest, the musicians do not look at the conductor, or at least not enough, unless he places great emphasis on it.

It is sometimes due to the line of least resistance, routine, or they forget.

The musician believes that he does not have to see because it is enough to hear. But if he performs according to what he hears he is not following the conductor, but he is moving along with the weight of the group. This is a much more serious fault than is generally realized.

The musicians, each one of the musicians, must follow precisely and only the director. Only in this situation is the conductor truly a director.

The musician follows the director by one means only, by watching every moment with his eyes wide open. Only with visual communication established is the conductor able to obtain the conditions which will bring about the mechanics of good performance, whether it be attack, gradual or sudden tempo changes, balance of sections and sonorities etc. etc. and moreover, only by this means is he able to transmit his musical ideas, his spirit, his impulses, his musical feelings in each moment of performance.

Se continuara [sic]
(To be continued)

Translator's note: This series of papers in Nuestra Musica remains incomplete. No further papers appeared (so far as I can discover). L.H.

AN INVESTIGATION OF THE PROFESSIONAL BACKGROUND ROLE, DUTIES AND LEADERSHIP SKILLS OF CHAIRS OF MUSIC EDUCATION PROGRAMS IN HIGHER EDUCATION

Joseph David Shirk
University of Missouri--Kansas City, 1989

Abstract

The purpose of this study was to identify the professional background, role, duties and leadership skills of chairs of music education programs in higher education.

Data were collected through a questionnaire containing five sections. Section one contained five descriptive questions concerning the subject's present position. Section two contained eight questions concerning the professional background and experience of the subject. Section three contained 26 questions designed to describe the role and duties characteristic of music education chairs. Section four contained five questions about the subject's present institution. Section five contained 24 questions soliciting the subject's opinion about leadership skills essential for a chair of music education.

Results from sections one through four were reported using descriptive statistics based upon frequencies, means, and percentages. Results from section five were based upon probability at the 95 percent confidence interval which was used to establish a hierarchy of music education leadership skills.

Results indicated that music education chairs are generally appointed by the head of the music unit for an indefinite duration. They generally possess a doctorate in music education with prior teaching experience in public schools as well as higher education. Their primary applied music area is usually in brass, voice, or keyboard, with teaching experience in band, or general music. They have generally published research related to music education and are presently involved in research. They participate in curriculum decisions, class load assignments, budget, and advisement. Teaching represents the largest percentage of the music education chairs' time, although they are very active in committees within and outside of the music department.

The largest percentage of chairs teach in institutions with 0 to 50 music education majors. The majority of chairs teach courses in the required music education curriculum with other faculty.

Music education chairs identify a variety of interpersonal skills as generally the most essential techniques in providing effective leadership within the music education program. Seven suggested recommendations for further study are listed at the conclusion of the study.

A STUDY TO ASCERTAIN THE COMMONLY PREFERRED PEDAGOGICAL DESCRIPTIONS OF FUNDAMENTALS OF BEGINNING OBOE

Janet Ruth Schlief Payne
Master of Arts, Southeast Missouri State University

Abstract

The purpose of this study was to ascertain oboe specialists' commonly preferred description of fundamentals of beginning oboe pedagogy. A survey of related literature yielded 112 different descriptions of playing position, embouchure, breath control, and tonguing. A survey instrument, including the 112 descriptions, was constructed and mailed to 100 oboe specialists, selected randomly from the 232 who are full-time faculty in colleges and universities in the United States as listed in the College Music Society Director of Music Faculties in Colleges and Universities, U.S. and Canada, 1989-91.

Results were tabulated from information supplied by 41 respondents (41%) who selected 45 (40%) of the 112 descriptions as preferred and 21 (19%) as unacceptable. Forty-six (41%) were deemed to be so controversial that they could not fit either category of preferred or unacceptable.

AN OBOE RECITAL OF SCANDINAVIAN MUSIC WITH ANALYSES

Johanna Louise Erdman
Master of Arts, Southeast Missouri State University

Abstract

This creative project in lieu of thesis consisted of a full-length recital with supporting paper which includes analyses of the first movements of five compositions for oboe and keyboard by Scandinavian composers. The program included: Trio Sonata in G minor (18th century) by Johan H. Roman, "Fantasy Pieces" (19th century) by Carl Nielsen, "Novelletter" (20th century) by Stig Gustav Schönberg, Sonata for Oboe and Piano (20th century) by Arne Mellnäs, and "Canto nordico" (20th century) by Erland von Koch. All composers are Swedish, except Nielson who is Danish.

The analyses are presented according to the following parameters: harmony (including texture), melody, rhythm, and form. Significant performance considerations are also discussed.

THE DEVELOPMENT OF THE COMMUNICATION SKILL EVALUATION INSTRUMENT: AN INSTRUMENT DESIGNED TO ASSESS THE COMMUNICATION SKILL OF THE CONDUCTOR IN THE CHORAL REHEARSAL

Nancy E. Osman, Doctorate of Musical Arts
University of Missouri--Kansas City

Abstract

The purpose of this study was to design the Communication Skill Evaluation Instrument (CSEI), administer it to amateur choral ensembles, and use the data to establish the efficacy of the instrument. The question examined was: Would a conductor who exhibited specific communication skills be judged as more effective by amateur choral members than a conductor who did not exhibit those skills?

Fifteen conductors validated the list of skills included on the CSEI. A videotape was prepared, and following a pilot study, the edited tape presented five conductors in a rehearsal situation, who represented both strong and weak communication skill.

The samples consisted of high school singers, amateur adult singers and experts. Approximately one half of the amateur samples used the CSEI in evaluating the five conductors. The other half ranked the conductors subjectively using no guide. The experts evaluated both objectively and subjectively.

The data were analyzed using a Pearson Correlation Coefficient formula, Kendall Coefficient of Concordance, ANOVA and MANOVA. Analysis of the data indicated that:

1. The subjective evaluations of the conductor's communication skill did correspond with the evaluation of subjects using the CSEI.

2. A significant association was found among CSEI scores for the various groups of high school, amateur adults, and experts.

3. A strong association was found among CSEI scores for a new group of thirty adult subjects.

4. Test-retest scores for a homogenous group of 30 adults showed a significant association.

5. The CSEI did allow a statistically reliable discrimination concerning both good and bad communicators in the choral rehearsal.

Based on the findings of this study, it was recommended that the CSEI might be used in developing undergraduate conducting curriculum, as a checklist for teachers and students of conducting to assess communication skill in the rehearsal, and for choral practitioners to use in assess their communication effectiveness with their own ensembles.

GEORGE FREDERICK ROOT AND HIS CIVIL WAR SONGS

Cheryl Ann Jackson
Central Missouri State University

Abstract

George Frederick Root (1820-1895) was one of the most prolific composers of American Civil War songs. Whereas many of his contemporaries were writing new words to old tunes, Root's songs were new both in music and text. His Civil War songs were of the typical parlor song genre which was very popular during the latter half of the nineteenth-century. His songs are truly American music rather than imitations of European music of the time.

The Civil War was a tragic era in American history. Through the songs, the people found an outlet for their emotions. In few periods in American history has a major conflict affected music as much as the Civil War. The parlor songs sung during the Civil War were accessible to the amateur musician and were sung not only at home in the parlor but on the battle-field as well, giving solace in a most tragic time.

The close study of several war songs of Root, along with the study of American music and American history, is the focus of this thesis.

BELA BARTOK AND THE SONATA FOR TWO PIANOS AND PERCUSSION

Roger Schupp
Central Missouri State University

Abstract

Bela Bartok was one of the most inventive and influential composers of the Twentieth century. The Sonata for Two Pianos and Percussion is not only a staple in the chamber music repertoire, but a trend setter in the use of percussion instruments in the chamber setting. This supporting document provides the following information pertinent to the sonata and its performance:

A short biography of Bartok.

A history of the Sonata for Two Pianos and Percussion with information regarding its commission, premiere performance, subsequent performances, and its reorchestration as the Concerto to Two Pianos, Percussion and Orchestra.

A brief analysis of the work with special emphasis on scoring techniques and thematic material. Musical examples are included.

An explanation of the use of Golden Section in the Sonata for Two Pianos and Percussion. Emphasis is put on the origin of the Golden Section and how it can be used to define the structure of the sonata.

Suggestions for percussionists on how to minimize difficulties in the preparation and performance of the Sonata for Two Pianos and Percussion.

Diagrams of possible state set-ups and a bibliography of writings about Bartok for those wishing to do further research into his life and compositions.

INSTRUCTIONS TO CONTRIBUTORS

Editorial Policy and Procedures:

The editorial committee welcomes contributions of a philosophical, historical or scientific nature which report the results of research pertinent in any way to instruction in music as carried on in the educational institutions of Missouri.

Manuscripts are reviewed by the editorial board in a blind review process. The collective recommendation of the reviewers determines whether a manuscript will be accepted for publication. Manuscripts submitted for review must not have been published nor be under consideration for publication elsewhere.

The editorial committee subscribes to the Research Publication/Presentation Code of Ethics of the Music Research Council of the Music Educators National Conference and the National Research Committee of the National Association for Music Therapy.

Format and Style:

Articles should be typewritten with double spacing on 8 1/2 x 11 paper. Articles normally should not exceed 20 pages in length. Manuscript style should follow recommendations of the Publication Manual of the American Psychological Association (3rd ed., 1983). All figures and tables should be submitted camera ready.

To assure anonymity during the reviewing process, author's name(s) and address(es) should appear on a separate cover page only. Names and other material in the text which might identify the author(s) should be avoided.

Authors should submit four copies of their article to the editor. Contributors will be notified of the decision of the editorial board.

Wendy L. Sims, Editor
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MISSOURI JOURNAL OF RESEARCH IN MUSIC EDUCATION

Number 28

1991

Published by the
Missouri Music
Educators Association

MISSOURI JOURNAL OF RESEARCH IN MUSIC EDUCATION

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MISSOURI JOURNAL OF RESEARCH IN MUSIC EDUCATION

Published by the Missouri Music
Educators Association

Number 28 1991

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PREFACE

The *Missouri Journal of Research in Music Education*, published by the Missouri Music Educators Association, is devoted to the needs and interests of teachers of music in Missouri and the nation. This issue is the twenty-eighth.

The members of the editorial committee are grateful to those readers who have written suggestions concerning the content of past issues and request that criticisms and suggestions again be sent to the editor concerning the content of this issue. We strive for a reasonable balance among music theory, history, philosophy, aesthetics, and pedagogy.

We express our deep gratitude to the Missouri Music Educators Association for their financial support to make it possible to continue to publish the *Missouri Journal of Reasearch in Music Education*.

The Editorial Board

The *Missouri Journal of Research in Music Education* (ISSN 0085-350X) is published annually by the Missouri Music Educators Association. Copies can be obtained by sending $2.00 (cash, check, or money order, payable to Missouri Music Educators Association) to the editor. Inquiries relating to the availability and cost of back issues should be directed to the editor.

THE EFFECT OF VOCAL MODELS, CURRICULUM, AND GRADE LEVEL ON THE PITCH MATCHING ACCURACY OF ADOLESCENT MALE SINGERS IN VARIOUS STAGES OF VOCAL DEVELOPMENT

Judy K. Bowers
Florida State University

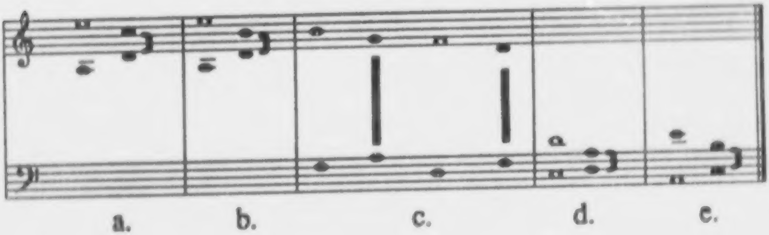
Singing is fundamental to the elementary music program, and those students who experience success often continue singing in middle school/junior high school with the selection of choral music electives. However, by seventh grade, most boys have begun the voice change and frequently experience frustration rather than enjoyment when singing in choir (Cooksey, 1977). It is important that middle school/ junior high choral teachers be knowledgeable of the scientific data reported by Cooksey (1977), Cooper (1965), Swanson (1959), McKenzie (1956), and others. These detailed descriptions of the changing voice phenomenon can provide guidance to teachers regarding the vocal training, the choral voicing, and the literature restrictions of adolescent male singers. Equally important is the growing body of research regarding effective vocal models and curriculum impact.

Interesting and conflicting results regarding effective vocal modeling have been reported in recent years. Sims, Moore, and Kuhn (1982) found that young children responded more accurately to a female model than to a male model. Similarly, a comparison of pitch accuracy of students in grades one through five responding to three models produced results of greater accuracy matching a child's voice and a female's voice than matching the male model (Green, 1986). Small and McCachern (1983), however, found that first grade children responded equally well to female and male models. The literature suggests that octave as well as timbre are important issues for music teachers working with young voices. Petzold (1966) and Clegg (1966) found that chidren responded more accurately to a model singing in their same octave than to a higher octave flute model or a lower octave male vocal model. In another study using octave and the male model, pitch accuracy was significantly better among third grade students when responding to a falsetto model rather than the octave below (Montgomery, 1989). Simliar response to a male model by fourth grade students was discussed by Kramer (1986). Killian (1985) examined the response of male and female adolescents to high and low octave models. Octave placement apparently was not an issue with these adolescents, as males and females showed no significant difference in accuracy of response to models at either octave.

Yarbrough, Green, Benson, and Bowers (1989) found no difference in pitch matching accuracy of subjects responding to a model with syllables or hand signs, but significant difference between the accuracy of the two Kodaly based response methods and the students responding by rote on a neutral syllable. Curriculum effectiveness information could possibly suggest teaching strategies for those choral situations with unstable students populations. One curriculum frequently used in school is the Kodaly method (Choksy, 1981), a spiral curriculum which provides the learner with experience across time, labeling of this experience by the teacher, and practice (teacher directed and independent). Experience, labeling, and practice must occur at every new step of the curriculum to effectively advance the student. Reasons such as schedule problems and school transfers often result in mixed classes of trained and untrained students. Certainly the goal for teachers is to successfully integrate untrained students into the curriculum with the trained students. According to Piaget's theory of readiness, however, a student can perform a task when developmentally ready (Phillips, 1981). This philosophy offers hope that students untrained but "ready" might successfully function within the music curriculum when provided with appropriate structure from the teacher.

Three theories for the male adolescent voice change differ somewhat (Cooksey, 1977), but all have stressed the need for appropriate range in vocal parts of junior high music. Cooper cited seventh grade as a year when most boys have entered the voice change, with the voice slowly continuing to lower. Swanson believed the voice change involves a rapid and dramatic drop, with a range increase of one octave not uncommon among 30 to 40 percent of the eighth and ninth grade boys. McKenzie supported the idea of a lowering of the voice through successive pitches (rather than a rapid drop), but believed this lowering can happen quickly or slowly. Factors of physiological development have apparently been strong indicators of voice maturation (Joseph, 1965), and the impact of the state of vocal development on pitch accuracy has been examined. Cooksey promotes a five stage developmental process which reflects both musical and physiological research findings (See Figure 1). Though the rate of voice mutation may vary greatly, Cooksey contends that all stages of change are experienced in sequence (Cooksey, 1977).

Figure 1. Ranges and Tessituras for the Changing
Male Voice Developed by John Cooksey



*Bracketed notes=tessituras

Cooksey suggests extension of the upper range 1 step for all examples except d.

Cooksey suggests extension of the lower range 1 step for examples b, d, and e.

a. Stage I	Boy Soprano. Voice at its peak: 1-2 years
b. Stage II	Midvoice I (or alto): 3-9 months
c. Stage III, IIIA	Midvoice II. Crucial period of change (cambiata sound) 3-12 months
d. Stage IV	New Baritone. 1-2 years
e. Stage V	Voice is"settled". Some development continues

An additional influence of pitch matching accuracy for changing voices, octave of pitch presentation, has been examined. Unchanged boys and changed baritones (in grades seven and eight) matched vocal models at both high and low octave more accurately than seventh and eighth grade changing voice males. However, the octave of presentation made no difference in the accuracy of the response by the more accurate singers (Killiam, 1985).

A variety of variables reported in changing voice literature have been identified, described, and/or manipulated to determine their effect on the pitch matching accuracy of adolescent male singers. The purpose of this study was to examine in combination the effects of octave and timbre within four models on the pitch accuracy of adolescent males. The models were female high octave, female low octave, unchanged boy (third grade), and changed adolescent male (eighth grade). Two other factors for consideration were training (based on a sequential curriculum) and grade level. The effect of the voice change, in the broad categories of unchanged or changing, was also examined.

METHOD

Subjects

Male students enrolled in sixth, seventh, and eighth grade vocal ensemble classes in the Laboratory School of a major southern university served as subjects for this study (*N*=48). Sixth grade (*n*=31), seventh grade (*n*=8), and eighth grade (*n*=9) males were further classified as Trained (*n*=24) and Untrained (*n*=24). Voice classicfication included Unchanged (*n*=34) and Changing (*n*=14).

Independent Variables

Independent variables for this study were vocal models, music training in a Kodaly based curriculum, and grade level. Voice change classification, either unchanged or changing, was also examined to observe the effectiveness of a classification method.

The four vocal models were taped singing a six note pattern, do, re, mi, fa, sol, do, beginning of G. Model 1 (female high) was the regular choral teacher singing on G above middle C. Model 2 (female low) was the teacher singing the pattern down an octave on G below middle C. Model 3 (unchanged) was a third grade boy with an unchanged voice singing the pattern on G above middle C. The fourth model was an eighth grade baritone singing on the G below middle C. These pitches were selected because the G octave included pitches recommended for changing voice by experts Cooper (1965), Swanson (1959), and McKenzie (1956), as cited by Cooksey (1977).

The curriculum variable was categorized as trained or untrained, based on participation in the school music curriculum for more than the current year. The elementary curriculum at this school is a Kodaly based music literacy program ranging from kindergarten through fifth grade. Students in grades six through eight who select vocal music continue to sight read using solfege and hand signs. Due to expansion of school enrollment, half of the sixth grade students were newly enrolled. These new students had received limited or no elementary training prior to sixth grade, and were classified as untrained. Transfer students in grades seven and eight were also categorized as untrained.

Students were classified vocally as unchanged voice or changing voice (Cooksey, 1977, Killiam, 1985). Subjects met individually with the experimenter to determine voice classification based on quality, range, and tessitura. Quality was rated as soprano, breathy, or changed/thin (Cooksy, 1977) by the experimenter. Breathy or changed indicated a changing voice label for this category. Singing range was determined while vocalizing a five note descending pattern both up and down from B below middle C (Marple, 1975). Subjects who sang comfortably on the C above middle C and higher were labeled as unchanged for this category. Tessitura was based on self selected pitches (Marple, 1975) for singing "Jingle Bells" and "America". Subjects selecting middle C or below to begin these songs were labeled as changing voice for this category. After each of the three categories was determined (quality, range, and tessitura), the subject was then classified based on two out of three category agreements. No attempt was made to detail specific stages of voice change because students in all stages of vocal change generally must function together in choral settings. The changing category included boys in the early, breathy stages of change as well as baritone voices in more advanced stages.

Procedure

The four models were recorded on a master tape using a Sony microphone (model ECM-939LT), and a Marantz cassette tape player (model number PMD 430). These models were determined to be accurate by a Korg tuner. To control for order effect, each of the four models was subsequently dubbed onto four individual tapes in differing orders. Presentation order among these four individual tapes was dictated by a Latin Square design (Campbell and Standley, 1963). All instructions and one practice example were recorded onto each tape prior to the presentation of the stimulus models. The practice example consisted of a six note pattern on a repeated note (E) sung to the syllables do, re, mi, fa, sol, do. The practice example was included to ensure that students watched for a signal to sing, that recording equipment was working, and to present the Kodaly syllables for practice, because the syllables were new to most untrained singers. Students who missed the signal to sing were allowed to start over in the practice.

After hearing instructions on tape and completing the practice example, each subject was verbally reminded to listen to the tape and sing into the microphone when signalled. The subject then heard the first model pattern, received a cue to sing, and responded. Following the model was 15 seconds of blank tape for student response and 30 seconds of distraction music. The three remaining models were presented in a similiar manner. Due to one school interruption and two missed cues, three students were allowed to start over with one model.

Following the completion of the experiment, subjects again met individually with the experimenter to determine voice classification of unchanged or changing. Range, quality, and tessitura were evaluated at this point.

Dependent Measure

The analysis of the subject response tape was made with a Korg tuner (model DTM-12). Within plus or minus 50 cents of the target pitch was considered an accurate match. Intonation within a given semitone was not considered (Small & McCachern 1983; Killian, 1985). The pitch letter name was recorded for each of the 24 responses per subject to allow giving credit for pitch accuracy and correct intervallic (melodic) relationship (Pembrook, 1987). Subjects could earn 11 points for each model (six for accurate pitch matching and five for correct intervals), resulting in a total of 44 points (11 X 4 models). An independent observer examined data for 10 randomly selected subjects to determine reliability. Reliability, calculated as Agreements divided by Agreements plus Disagreements (Madsen and Madsen, 1981), was .91.

RESULTS

The primary focus of this study was to determine if models with timbre and octave differences would affect the pitch matching accuracy of middle school/junior high boys with various degrees of musical training. Analysis of the key note response (first "do" only) among the four models was done by Cochran Q Test to determine if the models affected initial pitch accuracy. Results indicated significant difference among the four models, Q $(3, N=192) = 29.42$, $p < .001$. Subjects first pitch was most accurate in response to the high octave female and the low octave changed voice models, with 25 and 23 of the 48 subjects singing correct pitches, respectively. The least accurate number of responses, 3, was recorded for the low octave female model. The high octave unchanged model elicited 18 correct responses.

A three way analysis of variance with repeated measures on model was computed based on scores obtained by giving one point for each correct pitch and one point for each correct interval sung within each model. With 11 possible points per model, a perfect score would be 44. Results indicated a significant difference among responses to the different models F $(3, 132) = 5.839$; $p = .0009$. Post hoc analysis of the four models using the Fisher PLSD Test showed that the female high octave model and the changed baritone model received significantly more accurate responses than the female low octave model (See Tables 1 and 2). There was no significant difference due to curriculum or grade, and no interaction effect.

Table 1. Three Factor Analysis of Variance With Repeated Measures Comparing Responses to Four Models, Grade Levels, and Curriculum.

P

GRADE	2	14.671	7.336	.383	.6842
CURRICULUM	1	24.904	24.904	1.299	.2605
Subject (Group)	44	843.319	19.166		
MODEL	3	147.808	49.269	5.839	.0009*
MODEL * GRADE	6	25.101	4.184	.496	.8106
MODEL*CURRICULUM	3	27.835	9.278	1.100	.3518
MODEL*Subject(Group)	132	1113.868	8.438		

* $p < .05$

Table 2. Post Hoc Comparison of Mean Percentage Correct Responses to High Female, Low Female Unchanged, and Changed Vocal Models.

female high	changed	unchanged	female low
6.375	5.958	4.562	4.125
______ns	______	______	ns______

$p < .05$

Further analysis was done by comparing the accuracy of responses sung by changing voices with the responses of unchanged voices. Results of a Mann-Whitney U ($z = 4.673$; $p < .05$) indicated the unchanged adolescent singers were significantly more accurate on the selected pitches than the changing voice singers. The impact of the octave presentation by models was examined using a Wilcoxen Matched Pairs Test. Results indicated no significant difference in responses to high octave and low octave model presentations ($z > .82$; $p > .05$), which supports previous research (Killian, 1985).

DISCUSSION

Previous research examining response to vocal models has reported significantly greater accuracy in response to a female model than to a male model. The current study did not replicate this result. Responses to both the high female model and the changed baritone model were significantly more accurate htan the unchanged model and the low female model. It is possible that the male models used in this study, which were unchanged and changing voices rather than adult males used in much of the previous research, introduced a key difference. When comparing these young models to an adult male model, timbre becomes an issue. This adolescent model difference should be considered when comparing results of this study to prior research. Studies reporting significantly greater accuracy of response to a falsetto model than to a lower octave male also measured responses to different timbres than presented in this study.

Small and McCachern (1983) reported no difference in the accuracy of response to male and female models. The present study addressed accuracy of response to male and female models at both high and low octaves; there was little male-female difference when examining means. The male-female issue is confounded in this study by the introduction of timbre and octave issues. Means indicate that although the high female model received slightly more accurate responses from subjects, the low female model was considerable less successful than all other models in eliciting accurate responses. This study did replicate earlier research by Killian (1985) involving adolescent subjects, which reported no significant difference in accuracy of response to models at high and low octaves.

Results of grade level analysis appear similar to earlier findings which stated that grade level did not affect the accuracy of subject responses. Evidently, grade level is not an important consideration when determining the choral grouping most likely to produce singing accuracy.

The curriculum variable, the trained versus untrained accuracy issue, did not match previous research (Yarbrough et al, 1990) because training did not significantly impact the singing accuracy of the adolescent male subjects. However, subjects in the two studies differed in age, and the training issues were also dissimilar. The former study trained all subjects in pitch matching and then measured differences in accuracy based on a response method. The current study compared responses of students trained in pitch-matching with responses of students with little singing experience and no previous pitch-matching instruction. This may account for differing outcomes.

As an attempt to provide a comfortable environment for subjects, the regular choral teacher was selected to sing both female models. In retrospect, this may have affected the outcome of this study, as students have practiced matching her high octave sound every day. The untrained students made their most accurate responses to the high female--the only model that they have matched in a choral setting. The trained/untrained issue also had some complications. Although meeting the guidelines for untrained singers, four of the five seventh and eighth grade boys classified as untrained had actually received music training during one year of band. Though not vocal preparation, this band experience certainly may have affected their vocal pitch matching performance.

The male adolescent changing voice continues to be an intriguing challenge to choral music teachers. A small, but growing body of research has examined pitch matching and the changing voice singer. The results of the present study seem to concur with much of the earlier research regarding model and grade level. Results suggest that significant differences in pitch accuracy do occur between boys in various stages of the voice change. Uncertain changing voices, as well as unchanged and changing singers who already matched pitch quite well, were involved in this study. Although responses to the high octave female model were the most accurate for the total group, accuracy trends suggested by responses to the changed baritone suggest futher study is warranted. Highest accuracy for changing voices occurred when responding to the low octave baritone. The timbre of the model and/or the range of the pattern may explain this accuracy. Similar trends were observed due to training, with trained subjects responding most accurately to the female high octave model and untrained singers responding most accurately to the changed model. Whether the octave of presentation or limited experience in vocal production contributed to this result is not clear. Familiarity with the model (regular teacher) may have contributed to the greater accuracy of the trained singers. Future research for teaching the changing voice singer might examine only those uncertain singers in the changing voice category to determine the most effective pitch matching model for singing in the most effective range. This study employed a five note pattern which made range a factor contributing to the success of some singers. Uncertain singers might be more accurate responding to all the models if the modeled pitches represented a more limited range. Should accuracy in response to a changed baritone singer be replicated with future study, then the accuracy of response to this model by other singers in the choir would also become important information for teachers.

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FROM ROTE TO NOTE; USING A THREE STEP APPROACH IN TEACHING RHYTHM

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Children need a simplified method for transferring enactive (rote) rhythm learning to symbolic (note) rhythm learning. I have created an approach which attempts to address this problem based on the "Generative Theory of Music Learning" (Meske, 1986). The approach implements the use of iconic symbols between the enactive and symbolic stages. This curriculum was implemented and evaluated to assess possible advantages in using a simplified approach to teach rhythm.

Reimer (1989) states that music literacy has been a primary goal of the school music curriculum since its inception. A choice of methodology for teaching rhythm reading, therefore, would seem critical toward achieving this goal. Considering the importance of rhythm reading, relatively little experimental research has been conducted to substantiate the effectiveness of rhythm reading procedures and methods advocated by music educators. This is due in part to the fact that music teachers have held such diverse perspectives on the complex process of rhythm reading.

One procedure for learning rhythm is the rote approach. Some music educators advocate the development of aural perception before teaching notation, and strongly support the rote-before-note method of instruction. The performance of rhythm patterns that are learned orally without visual stimuli can be accomplished in several ways. Several studies (Bebeau, 1982; Colley, 1987; Shehan, 1987) have found that learning rhythm patterns through aural means uses the capacity for short-term memory. Rhythm patterns may best be remembered when associated with imaginable or concrete words, or when arranged in syllable groups that share a key component (e. g., rhyming words or beginning consonant sounds). This also allows "the learner to organize new material through a recording process" (Shehan, 1987, p. 118).

Colley (1987) claims that students using words and syllables assigned to the intact notation pattern remain more interested and enthusiastic. Because of continued interest, they will accept each new rhythm pattern as a challenge regardless of its complexity. This type of an observation "indicates that children can and will enjoy music classes while learning rhythm" (Palmer, 1976, p. 118).

This method of rote learning can be named and interpreted several ways. Bebeau (1982) categorizes the simplified speech cue methods as a combination of Orff and Kodaly methodologies. From Orff, the speech cue method employs the idea of selecting syllables which have durational values closely corresponding to the actual value of notes with which they are paired. The concept of permanently pairing specific speech cues with specific notation symbols is borrowed from Kodaly. Bebeau (1982) found that when rhythmic symbols are read by applying speech cues, the child will go through simple steps in being able to engage the appropriate rhythmic response at the appropriate time.

Shehan's 1987 investigation focused on mnemonics. She claims that syllables and words recited aloud may reinforce the digits, words, and rhythms to be memorized. However, "music reading skills are learned most efficiently through a multifaceted approach that includes the rhythm sound, its associated mnemonics, and the notation symbols" (Shehan, 1987, p. 125).

Bebeau (1982) and Meske (1986) support the idea that fractional definitions of notational symbols should be introduced only after students can perform simple rhythm patterns using an alternative recitation system such as those already mentioned. Currently utilized alternatives to the traditional whole note definition employ both kinesthetic activity and verbalization (Colley, 1987). Alternatives besides those involving words and syllables include those that involve all or part of the body in the rhythm pattern. Hoover (1968) states that in order to develop rhythm properly, it is necessary to recognize the basic principle that there must be physical motion as well as a mental concept of a rhythm pattern.

Jacques-Dalcroze is credited with being one of the first to explore the possibilities of body movement as an aid in the teaching of rhythm. Many of Jacques-Dalcroze's principles have been incorporated into other methodologies of teaching rhythm. Bell (1977) found that students can often test their own mastery of rhythm by walking, clapping, or tapping rhythm patterns. Several authors (Gardner, 1971; Meske, 1986; Thurmond, 1977) agree that initial experiences with rhythm should include body movement such as clapping, snapping, stamping, and patsching (patting the lap) to establish an understanding and internalization of rhythm. D'Angelo (1968) and Gordon (1988) suggest that rhythm must be felt within for the student to be successful performing rhythm patterns.

Boyle (1970) and Hoover (1968) have specifically recommended movements such as tapping the underlying beat with a foot and clapping the rhythm pattern to provide success with various rhythm configurations. However, this type of methodology has proven to be less successful than using verbalization and gestures (Shehan, 1987).

Methods for simplifying the rhythm reading process are recommended for beginners, but it is generally assumed that students will eventually transfer their rhythm reading to the traditional method (Meske, 1986). The traditional method is one that first requires the students to maintain a steady pulse while performing rhythm patterns, and secondly, requires application of mathematical skills. The application of mathematical relationships requires concentration and a considerable amount of cognitive processing (Bebeau, 1982). However, Boyle's investigation (1970) indicated that students who read rhythm in the traditional way may actually make significant gains if required to maintain a steady pulse at all times. Current thought on the traditional approach of music instruction is contradictory.

The problem with the traditional approach is that even if children possess the mathematical skills to break down the notational values, they may not be successfull at "reading" rhythm patterns. Some students seem to grasp rhythm concepts with little effort. However, it is the music educator's duty to try and help the remainder of the students who have some or even a great deal of difficulty with rhythm.

In spite of the importance of rhythm in developing music literacy and performance skills, many music educators fail to undertake a systematic approach for teaching it. Herein lies part of the problem. Many different approaches for teaching rhythm can be successful for both the learner and the teacher if the curriculum is taught systematically. Palmer's investigation (1976) showed that two different methods of teaching rhythm by using syllables were each successful because thay were taught systematically though regular instruction.

The Generative Theory of Music Learning (Meske, 1986) follows a systematic approach. The approach precedes the reading of rhythmic notation with the echoing of various rhythm patterns using verbalization and body movement, and with the use of rhythmic icons in order to help internalize dimensions: (a) the sensing of duration in relation to the underlying beat, and (b) the sensing of durations in relation to the shortest sound within that particular rhythm. "Successful reading of rhythm is dependent on the perception of duational relationships, rather than on the identification and labeling of individual notes" (Meske, 1986, p. 14). Music educators need to encourage students to respond in a number of ways to those rhythmic patterns discernable at various levels of musical organization so that all rhythmic experiences can be positive and successful.

The purposes of this study were as follows:

1) To determine if a seven week period of instruction featuring enactive, iconic, and symbolic modes of learning would significantly increase students' abilities to create and perform rhythm patterns.

2) To determine if rhythm abilities were related to math achievement scores and gender.

METHOD

Subjects

The subjects for this study were 96 third grade students enrolled at Bel-Nor Elementary School in the Normandy School District in St. Louis County, Missouri. The children all come from a lower-middle class socioeconomic background. A nearly even number of boys and girls was noted (*n* = 43 boys; *n* = 53 girls). The ethnic background was 78 black and 18 white students. Missouri Mastery and Achievement Test scores were used to classify students according to high, average, and low math achievement. There were 17 high achievers (MMAT math score between 91 and 100), 43 average achievers (MMAT math scores between 61 and 90), and 36 low achievers (MMAT math scores between 0 and 60). No control group was used in this study. The seven-week instructional treatment was administered to 96 subjects and the results were tabulated for the vaiables of gender and math achievement level. Eighty-five percent of the subjects were in the investigator's music classes in previous years. However, no concentrated rhythm reading instruction had taken place prior to this study.

Instrumentation

All subjects were given a 35-item pretest constructed by the investigator consisting of three parts: 1) "Rote Rhythm", measured the student's ability to imitate one and two measure rhythm patterns presented by an aural stimulus: 2) "Icon Identification", measured the student's ability to match iconic symbols with notes and notation patterns; and 3) "Note Knowledge", measured the student's ability to identify notation symbols by name and recognize them in rhythm patterns.

The "Rote Rhythm" section of the pretest was administered by the investigator at approximately the same time for 25 minutes each morning for one week to all 96 subjects. The other two sections of the test were administered by the students' five classroom teachers during a 15-20 minute interval at approximately the same time in the morning during one week. The posttest was administered in a similar fashion.

Experimental Treatment

The experimental treatment was given to all 96 third-grade subjects at Bel-Nor Elementary School. A control/comparison group was not used in this study because additional music faculty to implement other methodologies were not available. The lessons were identical for all subjects in terms of procedure, content, and length of time spent on each objective. The investigator, a certified music specialist, implemented the treatment during 21 25-minute class periods. The first five minutes of each lesson were used to review the previous lesson and concept. The remaining time in each lesson was spent on new concepts with new activities. The lessons were divided into three areas--the three modes of learning. Students who were absent were required to complete paper and pencil activities to maintain equivalency among all subjects.

During implementation of the curriculum, the investigator noted that the activities planned for each objective were more than adequate for mastery of the particular concept. At times, some of the activities were eliminated due to the unnecessary need for repetition or continued exploration of a particular concept.

Throughout the curriculum implementation, a series of observation checklists were used by the investigator to monitor the subjects' ongoing progress and mastery of specific objectives. This was necessary due to the fact that a new rhythmic concept cannot be taught without a knowledge of the previous concept. There were also several paper and pencil tests of mastery given throughtout the implementation which were recorded in the invesitgator's grade book. These tests were activity sheets or written tests taken from the three textbook series (Silver Burdett, MacMillan, and Holt, Rinehart & Winston) used in the curriculum. All tests for mastery were evaluated immediately following administration so reteaching could take place if necessary before going on to the next objective.

Initial practice in rhythmic performance consisted of numerous rote echo exercises, each comprising a complete measure or two complete measures. The echo exercises were often accompanied by kinesthetic movements such as clapping, stamping, snapping, or patsching. Children were then asked to perform one and two measure rote patterns to accompany familiar and unfamiliar songs using kinesthetic movements and common rhythm instruments. Opportunities were given for both group and individual performance.

After the mastery of the enactive (rote) mode, instruction moved into the iconic mode of learning. In the iconic mode, subjects were introduced to long and short rhythm icons and the verbal patterns to be used with each (see Figure 1).

Figure 1. Rhythm Icon Notation with Verbalization.

short short short short short short short short

l o n g l o n g l o n g l o n g

l - - - o - - - n - - - g l - - - o - - - n - - - g

l - o - o - - o n g

Several activities dealt with using these rhythm icons to create and perform rhythm patterns with the correct verbalization (see Figure 2).

Figure 2. Rhythm Icon Patterns With Verbalization.

short short short short l o n g l o n g

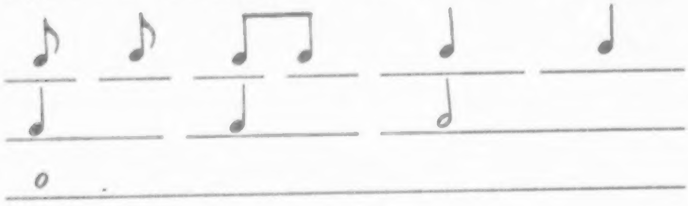
short short l o n g short short l o n g

l - - - o - - - n - - - g short short l o n g

The final compilation of using rhythm icon patterns was for the subjects to compose a four measure piece using rhythm icon notation. Relationships were established between the length of the icons so students were able to comprehend and compose the music correctly. Several paper and pencil activities assisted the students in mastering the iconic mode of learning.

The symbolic mode of learning which deals with the actual rhythmic notation symbols followed the iconic mode. The students were asked to read specific notation symbols (one eighth note, two beamed eighth notes, quarter notes, half notes, and whole notes), and to know the symbols' names and their corresponding durational values. They were also instructed on how to match newly learned notation symbols with the more familiar rhythm icon notation (see Figure 3) in order to transfer from rote to note stimuli.

Figure 3. Matching Rhythm Icons To Notation Symbols



Because the relationship had already been established between the rhythm icons, it was much simpler for the students to transfer this knowledge into the notation symbols. Paper and pencil execises were useful in helping the students master this concept. The final project was for the students to compose on their own a twelve measure rhythmic piece. Before any individual work took place in the curriculum, the class always created or performed as a whole so the concept of what was expected would be clearly understood.

While in the symbolic mode of learning, the students learned to read rhythmic notation patterns to accompany familiar and unfamiliar songs using kinesthetic movements and common rhythm instruments. Opportunities for both group and individual performance were given.

RESULTS

The study was a pretest-treatment-posttest design (o - x - o). The data were analyzed by use of dependent and independent t-tests.

The mean pretest and posttest scores for boys and girls are shown in Table 1. The results of an independent *t* -test revealed no significant difference existed between the mean pretest scores for the two groups. Likewise, there existed no significant difference in the posttest scores for the two groups. The data indicate these two groups were fairly equal both before and after the treatment.

Table 1. Comparison Of Pretest And Posttest Scores For Boys And Girls

	Pretest			Posttest	
Treatment Group	*n*	Mean	S.D.	Mean	S.D.
Boys	43	17.69	6.20	30.24	4.78
Girls	53	19.25	6.34	31.00	3.76

The difference in scores appears between the pretest score and the posttest score for girls (t [52] = 12.13, $p < .001$) as well as boys (t [42] = 10.62, $p < .001$). Both groups showed a significant gain between the pretest mean score and the posttest mean score. Of the 35 points possible, the girls' pretest range was 6-31. However, their posttest range was 22-35. The lowest score represented a 16 point gain. The range of the boys' pretest scores was 6-32, virtually the same as the girls. However, the boys posttest range was 10-35. If the two lowest boys' scores were eliminated (10 and 18), the boys range would have been 26-35. With the elimination of the two lowest scores, the low score represents a 20 point gain, slightly larger than the girls' gain.

The mean pretest and posttest scores for high, average, and low achievers are shown in Table 2. At the $p < .001$ significance level, a significant difference occurs between the high achievers' pretest scores and the low achievers' pretest scores (t [58] = 4.69), with the high achievers scoring eight points higher. The average achievers scored four points lower than the high achievers and four points higher than the low achievers. In the posttest scores, there was a significant difference between high and low achievers' rhythm scores (t [58] = 3.70, $p < .01$), with the high achievers scoring five points higher than the low achievers. On the posttest, the average achievers scored only 1.54 points lower than the high achievers, but still scored almost four points higher than the low achievers. The larger SD on the low achievers posttest is probably due to the fact two low achievers scored well below the mean at 10 and 18, thus slightly skewing the low achievers' posttest scores. There was a significant gain for all achievement levels at $p < .001$ between the pretest and the posttest scores.

Table 2. Comparison Of Music Pretest And Posttest Scores For High, Average, And Low Math Achievers

	Pretest			Posttest	
Treatment Group	n	Mean	S.D.	Mean	S.D.
High	17	23.71	5.55	33.24	1.86
Average	36	19.14	5.93	31.70	3.07
Low	43	15.72	5.65	28.33	5.07

The range of scores for the high achievers' pretest was 15-32, whereas their posttest range was 29-35, with eight students scoring a 35. A gain of 14 points was made between the pretest and posttest low scores. The range of the average achievers' pretest scores was 9-31, with a posttest score range of 22-35, with eight students scoring a 35, and two students scoring below 25. A gain of 13 points was made between the pretest and posttest low scores. The range of scores for the low achievers' pretest was 6-27. The posttest range was 10-34, with four students scoring below 25. With the exception of the two low achievers scores (10 and 18), a low score gain of 14 points was made, comparable to both the high and the average achiever gains.

DISCUSSION

Can mathematics achievement indicate how students will perform on selected music tasks? In this study, the results seem to show that those students who scored high on the Math MMAT

Test also did better than the average and low achievers on a rhythm reading skills test. Average math students tended to be average in rhythm reading skills as well. While low math achievers scored lowest on pre-and-posttests, they made the largest pretest/posttest gains. The simplified teaching model approach may have benefited them most. Low math achievers did master the same music objectives as the average and high achievers, but they performed poorly on the testing measure. Therefore, the formal testing process may not be an accurate assessment of how the low achievers could perform rhythm reading. It seems that those who are low achievers in math may not necessarily be low achievers in music.

The curriculum was implemented with ease by the investigator. All materials were readily accessible, either at the school used in the study or through borrowing from other music teachers. The curriculum did not require much extra mental preparation on the part of the investigator. The activities flowed from one to another sequentially and systematically.

This study was conducted to determine the effect of a three-system approach to rhythmic learning on third grade students' abilities to perform and create rhythmic patterns. Over the years, teachers have held various perspectives on the complex process of rhythm learning. Some are in favor of a total rote approach, while others are in favor of a total note approach. Still others hold to the belief that a combination of the two approaches is best for teaching rhythm. The results of this study seem to indicate that for these third graders with little or no previous training in rhythm reading, the blending of an enactive (rote) mode of learning and a symbolic (note) mode of learning with a step in between (the iconic mode of learning) facilitates the learning of rhythm patterns. The sequential and simultaneous use of these modes of learning appears to enhance the retention of rhythm reading abilities.

The gains in mean scores were expected by the investigator because in music, until a specific musical concept is taught, or students are exposed to that concept, no foundation of knowledge of that specific concept exists. Therefore, it was predictable that the posttest scores would show a significant difference from the pretest scores. However, the investigator did not expect such large gains by the low achievers. The two lowest scores on the posttest (10 and 18) could have been attributed to nonattentiveness and impatience on the day of the test. Both students seemed to master the concepts as they were presented in class, but performed poorly on the testing measure.

The motivational level and the simplified sequential approach to learning rhythm played a large role in the success of all achievers, particularly the low achievers. It is possible that low achievers can perform as well as high achievers in rhythm reading if they are motivated, and learning is imparted in a less complex manner. Because there was no significant difference between boys' and girls' scores for the pretest or the posttest, it is assumed that gender has little or no effect on rhythm reading ability.

The investigator noticed the students had a positive attitude toward learning rhythm. Their enthusiasm was great during the implementation process. Because of this enthusiasm, students were on task all the time, and very much into what they were doing. They appeared to show a sense of accomplishment at being able to create and perform rhythm at a high success rate. Even the low achievers who generally struggle and are easily frustrated, showed enthusiasm and a willingness to learn. There were few behavior problems.

Almost all the students mastered each objective consistently. Because the curriculum was sequential and systematic, all students were able to achieve success in some learning mode at some level of difficulty. Students' completed music notation projects were displayed in the music classroom, and became an incentive for other students to do well so that their compositions also would be displayed.

Another incentive to do well was the investigator's constant praise of successful students. The reteaching of objectives also helped those who needed a little more time and experience to find success with a specific concept. Since mastery of concepts was necessary before moving to the next objective, gains were seen in the pretest/posttest scores.

All of the activities planned for implementation were not needed due to more rapid mastery of some objectives than anticipated. Due to the need to reteach some activities, an additional four to five class periods would have been necessary if all activities had been used. The only time students seemed to be unmotivated was when several class periods of paper and pencil activities were used in a row. The students might have been more restless due to the fact that music class does not usually require much paper and pencil work. Some activities were rearranged to provide more variety, but the content remained sequential and systematic.

In summary, it appears that rhythm reading skills are learned efficiently and effectively through a variety of modes of learning that include the rhythm sounds, the iconic symbols, and the notation symbols. Also, the fact that student enthusiasm was maintained for a long and intense instructional program is worth noting. It is believed that this enthusiasm is largely responsible for the increased effort and willingness to learn, and consequently, the mastery of the objectives. This observation indicates that students in the present study enjoyed music classes while learning to read rhythm patterns.

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LUTHER SPAYDE, ORGANIST, EDUCATOR AND ADMINISTRATOR: A STUDY AND ANALYSIS OF HIS CAREER INFLUENCE AND CONTRIBUTION TO THE MUSICAL ART

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INTRODUCTION

Luther Spayde began his career at Central Methodist College, Fayette, Missouri, as organist-choral director, teacher and administrator in September, 1930, and ended it at the same institution with his untimely death, forty-two years later, on 11 October, 1972. He totally dedicated his life and work to one school, and placed his students and teaching endeavors in a foremost position. He was the college's longest tenured professor and one of the most esteemed (Ragout, 1972, p. 10).

This study begins with a brief synopsis of the founding and growth of Central College since 1852, to 1930, the year Luther Spayde began his teaching career in the new Swinney Conservatory of Music. The second part of the study presents details regarding Luther Spayde's background and training. One would expect a musician of his caliber to have had excellent training with well-known teachers, and such was the case with Luther Spayde. The third aspect of this study documents elements of Luther Spayde's career at Central Methodist College from 1930 to 1972. He was recognized as one of the outstanding organists in Missouri ("Hold First,"1933) and his a cappella choir was proclaimed by leading musicians as one of the best in Missouri ("Luther T. Spayde," 1933). He was no less dedicated to teaching. One former organ student described Spayde by saying that "he taught me to abhor even the slightest sloppiness in organ playing" (Spayde Organ, No. 6). He taught counterpoint and composition, served as organist at the college church, became dean of the Swinney Conservatory, and found time to compose and arrange music. In addition to relating Spayde's experiences described above, this study also examined his teaching techniques so that this information may be available to future teachers.

CENTRAL METHODIST COLLEGE FROM 1852 TO 1930

Central Methodist College, including the Swinney Conservatory of Music, is the Missouri United Methodist Coeducational College of Liberal Arts. When the college opened in 1857 as a provisional college, it was known as Central College, and was a mens' school, joined on the south by Howard-Payne Junior College for women. The two colleges merged in 1922 (Central Methodist College Catalog, 1985-86).

The 1909 Central College course catalog mentioned music for the first time, stating that there were now two grand pianos, the Central College Band, and the Aristotelian Orchestra. By 1914 the band and orchestra were permanent organizations and in 1915, G. B. Lombardo became Central's first full time music faculty member (Bulletin, 1917).

With the merger of Howard-Payne and Central College in 1922, Central inherited a Fine Arts Department of considerable size. N. Louise Wright was Dean of the School of Fine Arts, and Director of the Department of Piano. The faculty consisted of four other piano teachers, three voice teachers, and one violin teacher who was also director of the orchestra. All of these teachers were graduates of well known music schools and several had studied abroad (Bulletin, 1923).

In September 1930, Dr. Robert H. Ruff became president of the college just as the Great Depression spread over the country. At the end of his first year, he had reduced costs and closed the year without a deficit (Tucker, 1967). The cycle of changes which began in 1926 with the construction of the Swinney

Conservatory of Music, the Cooper Parish House and Linn Memorial Church, a new men's dormitory, the remodeling of Brannoch and Cupples Halls, and complete landscaping of the campus was almost finished, These changes were accompanied by a corresponding improvement in the teaching staff of the college. Freshman students, instead of being drawn from a limited group of college patrons, came from an increasing geographic range and represented various environments. The scope of Central College was now more comprehensive, its circle of influence wider, and it was better prepared to serve as an efficient educational entity ("Building Program," 1929).

Such was the setting of Central College and the Swinney Conservatory in September, 1930, when Luther T. Spayde came to Fayette from Chicago to be Instructor of Organ and teach theory of music.

BACKGROUND AND TRAINING

Luther Spayde was born 21 September,1905, in Homestead, Pennsylvania. The only child of a Lutheran minister, he was raised in Lima, Ohio ("Funeral Sunday" 1972).

Piano lessons for Spayde began at the early age of five years, and when he was thirteen he started playing the organ (Allen, 1958). He took his first paid job as a church organist at the age of fifteen ("College Choir," 1933). He received the Bachelor of Music degree from Wittenburg College, Springfield, Ohio, in 1927, and Master of Music degree in organ from the American Conservatory of Music, Chicago, in 1929, where he studied with Dr. Wilhelm Middleschulte ("Luther T. Spayde," 1933). The following year he continued as organist-choir director at the Luther Memorial Church in Chicago. Following his last organ recital in June before coming to Fayette, a music review stated that "Mr. Spayde has for somtime been recognized as one of the leading organists of Chicago, and a musician of rare attainment" (Gillespie, 20 June 1930).

Spayde's professional training did not end with the advent of his teaching career at Central College in the fall of 1930. He studied theory, choral conducting, and organ during the summer months for twenty-four years at colleges including the Westminster Choir School, Princeton, New Jersey (Spayde, 1937); the Eastman School of Music ("Organist to Give," 1949); with Marcel Dupre at the University of Chicago ("Organist Studies," 1948); at the Christiansen Choral School (Who's Who, 1956); Northwestern University ("Spayde to Give," 1955); and also received the B.A. degree, with a major in French, from Central College in 1936 (Spayde, 1934-36). Spayde used French editions of organ music in his teaching, and had planned a trip to Europe, which did not materialize (Central College Bulletin, 26 July 1940). He might have planned to study in France, and therefore was preparing himself in the language by earning the degree in French.

A year and a half before his death, in April 1971, the honorary degree, Doctor of Music, was conferred upon Spayde by Ohio Northern University (J. L. Moore, personal communication, 25 August 1986).

LUTHER T. SPAYDE AT CENTRAL METHODIST COLLEGE--1930 -1972

> Occasionally a faculty is blessed with a hard working, dedicated member who literally donates his life and his work to a school....Dean Spayde was such a man. His competence and his sincere endeavors made the conservatory a hallmark of excellent music instruction in state and national rankings.

The above quotation was taken from the 1972 Central Methodist College yearbook, *Ragout,* which was dedicated to Spayde *(Ragout,* 1973*).*

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Concert Organist

When Spayde began teaching at Central College, organ recitals were a popular form of entertainment in the United States. Churches were proud of their electric pneumatic pipe organs, and concert halls and theaters throughout the country boasted of their enormous four and five manual instruments. Pipe organs were also to be found in homes of the wealthy as well as in colleges, universities, and even high schools (Ochse, 1975, 327-33).

Central's organ department was well equipped with a two-manual Kilgen "straight" type church and concert organ; two, two-manual Wicks "unit" type organs (Bulletin, April 1930); and the new three-manual Wicks "straight" type church and concert instrument in the college church. Spayde designed this organ and directed its installation ("Luther Theodore," 1933).

Spayde's performances at the organ fell into several categories: organist-choir director at the college church every Sunday; dedication recitals for new church organs around the state of Missouri; examination week recitals at the college; various other recitals and short programs for such groups as the American Guild of Organist's meetings, Missouri Music Teachers Association conventions, women's clubs, community concerts, and organ workshops.

Spayde presented nearly a hundred recitals between 1930 and 1972. Although his may not appear to be an ambitious schedule by some standards, when one considers that Spayde played for church every Sunday; directed the A Cappella Choir; taught classes in counterpoint, compostion, advanced harmony, advanced musicianship, and organ improvisation; was Dean of the Conservatory and practiced the organ several hours daily, it becomes apparent that only a remarkable musician could handle such a demanding schedule. It is also possible that he presented more than the ninety-eight recitals that have been documented (recital programs and Collegian articles in the possession of Nora Hulse).

In a report of the Central Missouri Chapter of the American Guild of Organists published in the *Diapason* (June 1935), the official magazine of the guild, Spayde was given recognition as an "outstanding recitalist." The article states that "in this program the numbers were played with exceptional brilliancy and surety of technique."

Two years later, a *Collegian* article attests to Spayde's continued success as an organ recitalist, stating that "the organist is among the most popular recital artists to appear here, and has done much to popularize the pipe organ as a concert instrument in this country" ("Organist Plays," 1937).

After about ten years of teaching at Central, Spayde had established several traditions, one being his playing of the Widor "Toccata" for all festive occasions as well as recitals and other programs. One might argue that the "Toccata" was becoming his trademark. People apparently enjoyed hearing him play this piece, and he undoubtedly felt obligated to play what his audience wanted to hear.

Even though Spayde seemed to be steeped in tradition, when he sensed a need for change, he was the first to attempt something new. In November 1939, Spayde tried a new type of faculty recital which featured Dr. N. Louise Wright and Miss Opal Lousie Hayes at two pianos with Spayde at the organ. The combining of two departments, piano and organ, in one recital was in accordance with the new plan of the Conservatory to present programs with more variety and interest for the general public ("Con Trio," 1939). Four months later Spayde presented another faculty recital in which he was assisted by two violinists who played the obligato parts for the Mozart Sonata No. 1 for organ and strings ("Spayde Presents," 1941).

Spayde continued presenting recitals up to the time of his death. On a recital in 1971 at the Methodist Church in Charleston, Missouri, he played his apparent favorites: *Sonata No. 6* by Mendelssohn, "Toccata and Fugue in D minor" by

Bach, and "Toccata" by Widor. He had been performing these three pieces since his first recital at Central in 1931 (Organ Guild, 1962-72).

Former Spayde students who have achieved prominence also attest to his high standards. Dr. Orpha Ochse stated that Spayde's performances were always carefully and thoughtfully prepared, and were important lessons for his students to hear, as well as fine recitals (Spayde Organ, No. 7). Robert Clark, organ professor at Arizona State University, tells that his teacher was even more demanding and stringent in imposing his standards upon his own performance than he was with his students.

Spayde would not allow his playing to be recorded, so no recordings of his recitals exist. However, one tape recording was found with this identification on the index: Organ 1958-59 Toccata...Widor. (The reel-to-reel tape is in the possesion of Nora Hulse). Janet Evans, a freshman that year, remembers that an A Capella Choir member made a recording of Spayde's playing without him knowing about it, and this may be that recording. The performance exhibits the perfection and inner strength one would expect to hear in Spayde's playing of the "Toccata" (Personal Communication, 1986).

Church Musician

Spayde was organist-choir director at the Paul H. Linn Memorial Methodist Church (the college church) for forty-two years. Ivan Lee LaTurno, pastor at Linn Memorial Church from 1965 to 1970 tells of his association with Spayde:

> He was a strict observer of what he believed to be the "proper" way to employ music in the service. Every pastor was given a copy of the hymnal in which he had marked the hymns, rating them for use in worship. If a hymn was not one he thought appropriate for use he was not above letting you know it.

> I liked and admired Prof. Spayde... ... . We had our differences, but never did I question his love of the church, his devotion to God, or his respect for me as his pastor. There were numerous times when he would come to compliment me for a sermon. Frankly, I found far more occasions when I was able to commend him for adding, through his music, to the beauty and meaning of worship at Linn Memorial (Spayde Church, No. 17).

Spayde's church service seemed to flow from the prelude to the postlude as one uplifting experience, a situation made possible by his talent and ability to improvise. Ted Spayde (Luther Spayde's son) recalled that there was no break in the music from one piece to the next since his father improvised the transitions at the organ and always continued playing beautifully after the anthem if the ushers were not finished taking the offering (Personal Communication, 30 June 1988).

Spayde directed the performance of selections from Handel's *Messiah* each December during the years 1959 to 1972. He also accomanied other performances on the organ that were given from 1930 to 1958 (Printed programs housed in Conservatory, 1930-72). The solos were sung by A Cappella Choir members, and the large chorus must have been impressive to hear, according to an account from the December, 1966 Collegian, which read, "Dean Spayde is directing the chorus, which includes over 100 voices, and is the largest group yet to sing the *Messiah* at CMC" (Carr, 1966).

Educator

Spayde was first and foremost an educator, as reflected by his title, Instructor of Organ and Theory of Music. When he came to Central in 1930, he brought to the college a different level of musicianship at the organ than had been there before, as evidenced by the following comments made by Burton Hughes, one of his first organ students:

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> My first year of study was with Mr. Spayde's predecessor. The difference was outstanding. I was very much impressed with his artistry. He taught by example and had the ability to perform and show the student the correct method, His knowledge of the use of proper phrasing was exceptional and he would mark your music accordingly. He was very meticulous in his instruction, and I might add, in everything he did--his person, his dress, his habits, even to his eggs--three minutes, no more, no less (Spayde Organ, No. 1).

Three of Spayde's organ majors taught at Central for two years after receiving their Bachelor of Music degrees, and also continued their own organ study. Orpha C. Ochse, Spayde's third assistant, graduated from Central in 1947, and received the Master of Music degree the following year from the Eastman School of Music. She then returned to Central and taught organ and music theory under Spayde's guidance from 1948 to 1950. She recalls:

> I became an organ major after my first semester of study with Luther Spayde. His teaching challenged me to explore the wonders of the organ and its music. Through him I discovered the area in which I have worked during my entire professional career...
>
> We remained in contact during the decades that followed. Throughout his career he remained true to his high standards, doing his best in preparing his students for careers in music or in more modest achievements, according to their abilities (Spayde Organ, No. 3).

When Spayde came to Central College in 1930 as head of the organ and music theory departments, he found that he was also expected to direct a choir every Sunday morning at the church where he played the organ. Within two years the choir grew from twenty-four to fifty members, and had given concerts in Kansas City, Sedalia, Pilot Grove, and Boonville.

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At this time there was only one college a cappella choir in Missouri, so Spayde, realizing the value of such an organization to the students and to the college, decided to form an a cappella choir at Central, and organize it as one of the college touring organizations. This choir also sang at the College church every Sunday during the school year until Spayde's death (Spayde, 1952).

The following excerpt from a story in the *Collegian* attests to the early success of the A Cappella Choir:

> The performance...was a masterful proof of what can be done by training a group of voices so that they blend perfectly, yet maintain a flexibility and depth of feeling... Throughout the concert, the music was remarkable for its shading, swelling from soft passages to thunderous, smoothly and evenly, yet with force and abstinence from harshness... Professor Spayde should be complimented on the work he has done ("Choir Concert", 1936).

As Spayde consistently had excellent choirs, the teaching techniques he used to achieve this standard are of interest and importance. The following responses from questionnaires sent to A Cappella Choir members reveal this information:

> The environment he created when you walked into a rehearsal was all business.
>
> The choir usually sang standing during a rehearsal.
>
> Rehearsals began with breathing exercises. Next, unison solfege vocalises were used that involved working on a good resonant tone for all vowels.
>
> Listening to each other was stressed.
>
> The warm-up concluded with four-part harmonic progressions on vowels preceded by the consonant "m".

> He worked on building chords, filling in thirds, both major and minor.
>
> When learning new music, he had each section learn their parts first with the help of the piano, then put them together a cappella, concentrating on listening to each other and staying on key. Phrasing, interpretation, and the total sound were then worked on (Spayde Choir, Nos. 32,35, 38, 39, 40).

Spayede's a cappella choirs had a sound described by several members as "homogenous" -- a superbly "blended" sound where all voices were to become one. No solo voices were allowed to stand out, and many fine singers never made his choir because their vibratos did not blend with the group (Spayde Choir, Nos. 33, 39, 40).

The following responses from questionnaires describe the extent to which Spayde's teaching made an impact upon choirmembers' lives.

> Dean Spayde molded my life to my success today. He encouraged me in my work at CMC to strive for the best.
>
> Four years on tour were my fondest memories of Central. I think the loyalty that was expected and taught was important. Learning to extend yourself to the extreme at times, was an important factor in my life (Spayde Choir, Nos. 33, 37).

A tradition of Spayde's choir was the singing of "Beautiful Saviour" by Christiansen on every concert from 1936 to 1972 (A Capella Choir Programs, 1936-72), and for the choir's first appearance of the new school year at the college church Sunday morning service (Central Collegian, 29 September 1950).

Spayde's A Capella Choir was more than just a college choir. It was an organization built upon tradition and emotion, whose members held great admiration for their leader and unbounded loyalty to the group. As Martha (Taylor) Cox (1951-55) so aptly stated, "when I hear "Beautiful Saviour" to this day, it still brings a tear to my eye. I guess once a member of the A Capella Choir, always a member " (Spayde Choir, No. 33).

John Stephens (BME 1969) expressed strong feelings by stating that to this day, he and his wife cannot hear "Beautiful Saviour" and the Widor "Toccata" without responding emotionally (Spayde Choir, No. 39).

College Administrator

> Dr. Spayde's name will live on in the memory of Central Methodist Chollege as OUTSTANDING. His students will ever praise his leadership (Spayde Colleague, No. 42).

This quotation expresses the feelings of many who came into contact with Spayde at Central. He was named Dean of the Conservatory by President Ralph Woodward in 1952, and had previously served as Chairman of the Division of Fine Arts of the college since 1949, and Assistant Dean of the Conservatory since 1950 ("Prof. Spayde, " May 1952). Dr. Woodward recalls:

> Luther was very strict. He had a German background, a German father, and he could be as stubborn as any Dutchman you ever saw and yet he was very amenable if it was policy of the college.
>
> As Dean of the Conservatory and with his strictness of seeing that the students follow the whole program, frequently he was accused by others in the college of not being concerned with it being a full liberal arts college. Spayde's problem here was trying to meet the require-

> ments of a good music program and still allow time for students to get in liberal arts work. Spayde could stand by his guns and he could make a case for what a music degree required (Personal Communication, 15 October 1985).

Spayde always had an ear open lest the students should violate one of his rules for practicing. One organ major, class of 1942, tells about this wife who minored in organ; "Luther's office was in the church. While practicing on the chapel organ beneath the church, she strayed from her assigned exercises and began experimenting with a few hymns. Luther roared down and gave her a practice cut for that hour" (Spayde Organ, No. 6).

Spayde's first accomplishment, after becoming Assistant Dean of the Conservatory in 1950, was to apply for music department membership in the National Association of Schools of Music (NASM). Out of thirteen schools applying for membership, the Swinney Conservatory was one of six granted associate membership. In November of 1952, the Conservatory was voted into full membership at the NASM Convention. According to a Central College Bulletin (January 1952), Spayde had been working for many years to have the institution attain this membership, which meant to the college that the music department was fully accredited by the only music accrediting organization in existence.

When Spayde became dean in 1952, the entire music department was housed in the three-story Swinney Conservatory building. This included the band room, choir room, practice rooms, teaching studios, classrooms, recital hall, and storage spaces. When the band was rehearsing, it could be heard throughout the building, even though the rooms were supposed to be soundproof. In February of 1965, Spayde was finally able to announce plans to expand the music department facilities into the basement of the Old Science Hall building, to include three studios, eleven practice rooms, a large uniform storage room, a library in which musical scores could be filed, and a large rehearsal hall for the bands. When these facilities were opened, the Conservatory basement was remodeled ("Dean Spayde," 12 February 1965).

Coincidental with these changes were Spayde's plans for a new organ in the College church as well as a new recital or concert hall to be built adjoining the music building on the north. Spayde's dream of a new recital hall was definitely in the making in 1969 when plans were mentioned in an alumni bulletin stating that "the Second Phase goals of the program of the new library building; the E. E. Rich Memorial Swimming Pool; a recital addition to the Swinney Conservatory of Music" (Central Methodist College Bulletin, October 1967).

One year later, in 1970, President Woodward retired. it appears that with his leaving, Spayde's hopes of ever having the new recital hall and organ for the College church faded.

Between the years 1969-70 Spayde was responsible for obtaining the donation of a large collection of musical recordings and music scores to the College from Mr. Charles Gifford of St. Louis. The records were valued at $12,000.00 and the books and scores were worth several thousand more (Clifford Collection, 1966-70).

Related Professional Activities

Spayde's recognition as a composer came early in has career at Central when the A Cappella Choir performed his anthem "Great and Marvelous Are Thy Works" on the 1940 spring concert and tour. Due to its popularity it was performed in the years to come on many choir tours, until Spayde's death (A Cappella Choir programs, 1940-72). The anthem received high praise in the *Diapason* magazine (August 1957, 16), and was recorded by the concert choir of the College of Puget Sound (Central College Bulletin [CCB], March 1959).

In 1952 Spayde compiled a fourteen page list of compositions suitable for church organists entitled, "Organ Music for the Church Service". He gave lectures on music such as the one on "Modern Music" (CCB, 13 December 1935). He gave organ-lecture recitals, and was visiting professor one summer at Montana State University, lecturing on organ and choir music at summer conferences for music teachers (Central Collegian, 3 May 1957).

Spayde served as an officer in several organizations over the years such as the Round Table Club (Round Table Club, 1944-72) and the American Guild of Organists Mid-Missouri Chapter. He had helped charter this chapter in 1931 and became the organization's first vice-regent (CCB, 18 December 1931).

Honors and Awards

Spayde was listed in the following directories of musicians and educators:

Who Is Who in Music
Who's Who In The Midwest
Directory of American Scholars
Who's Who In American Education
Who's Who In American College and University Administrators
Outstanding Educators of America

Other memberships in national societies include:

Hymn Society of America
Music Educators National Conference
National Fellowship of Methodist Musicians
Phi Mu Alpha-Sinfonia

In 1974, two years after Spayde's death, the Missouri-American Choral Directors Association established the Luther T. Spayde award to serve as a tribute to a man who perhaps was recognized more for his A Cappella Choir than any other endeavor. Prof. Byron Mitchell of Northwest Missouri State Uiviersity wrote that "Dr. Spayde taught for many years at Central Methodist and helped train a number of choral directors in our state. He had a good reputation, and it seemed appropriate to honor him as we established the award process" (personal communication, March 1984).

SUMMARY AND CONCLUSIONS

> "No one is indispensible -- but some people seem that way. Dean Spayde, we will miss you."

These words from the Collegian ("Spayde Dies," 1972), two days following Spayde's death, express the feelings of loss and grief felt by students and colleagues. He died at the age of sixty-seven after suffering a heart attack. All classes at CMC were cancelled the following day and flags on the campus were flown at half-mast throughout the day. Central Methodist President Dr. Harold P. Hamilton made this statement:

> The passing of Dean Spayde constitutes a loss of irreplaceable strength of Central Methodist College. For more than 40 years, he provided a dignity and discipline for the Swinney Conservatory of Music, intertwining inextricably his life with that of his students and the college itself. His work was monumental and ours is a grevious loss ("Campus Mourns," 1972).

As evidenced in the preceeding tributes, Spayde's impact upon the college, throughout his work in the Swinney Conservatory and college church, was of tremendous significance. The Conservatory enjoyed a reputation for excellence in regions beyond the state during Spayde's tenure, and was rivaled only by the Science division in achievement and tradition (Tucker, 131). Spayde was proclaimed as one of the top American organists by James L. Duncan, progessor of music at Southern Colorado State College, following a recital he presented there in 1967 ("Campus Mourns," 1972). It was to gain recognition for the college that Spayde formed the renowned Central College A Cappella Choir, which in turn created a prominent name for him.

Spayde's influence as a teacher will be felt for generations in schools, churches and homes across the nation. Mary Louse Perry, organ student from 1932-36, wrote that " at age 70, I am still playing for a church every Sunday and loving it. I still practice hour after hour. I still use music marked with Prof. Spayde's registrations" (Spayde Organ, No. 4).

Other Spayde students playing in churches around the state of Missouri include Virginia Clough Schilb, Patricia Chenoweth Wardell, Martha Taylor Cox, Janet R. Evans, and Richard Mallett. Further research into the number of Spayde organ students who went on to careers as church musicians would be warranted (Spayde Organ, Nos. 7, 11, 13, 15, 33).

Spayde devoted his life to the education of young musicians. His work as a concert organist, director of the A Cappella Choir, and administrator brought extraordinary recognition to the Swinney Conservatory. He also contributed to and enriched the religious life of the college and community through his untiring devotion as organist-choir director at the Linn Memorial Church.

As a summation of this study it seems fitting to quote the words of CMC Professor Donald R. Eidson, who wrote that Spayde's career at Central Methodist College can "serve as a great example to teach us all what dedication, love and application can mean in the life of one man" (Round Table Club Resolution, 7 December 1972).

This article is based on the author's doctoral dissertation, completed at the University of Missouri-Columbia, in 1989.

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THE EFFECT OF ADJUDICATING THREE VIDEOTAPED POPULAR MUSIC PERFORMANCES ON A "COMPOSITE CRITIQUE" RATING AND AN "OVERALL" RATING

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INTRODUCTION & REVIEW OF LITERATURE

With regard to music performance, the terms "judgement" and "preference" seem inexorably related. Price (1987) in his "Proposed Glossary of Commonly Used Words in Affective Response", defines JUDGEMENT as "a decision made after perception and discrimination." For the definition for PREFERENCE he states:

> A choice, (or) liking of something over something else. (It is) based upon many musical and soiciological factors including musical contour, degree of symmetry, order, closeness to optimal level of complexity, societal pressures, and degree of enjoyment. (It is) developed through training and familiarity. (p. 153)

These terms have relevance to the process of what educators regard as the highest level of cognition, e.g., "evaluation" (Bloom, 1984).

A perusal of music education research literature within this conceptual framework shows that two strands of research have evolved. While one strand investigates the idea of "music preference" (for instance Furman & Duke, 1987; LeBlanc, 1982, Wapnick, 1976), another is concerned with examining "music judgements." The latter category also includes performance adjudication (judging and evaluating), rating scales and performance evaluation (for instance, Abeles, 1971; Bergee, 1987; Burnsed & King, 1987; Fiske, 1975 & 1977). Both strands are concerned with determining how people (from elementary school aged non-performers to professional performers and adjudicators) choose, rate, rank order, evaluate, and generally, make judgements about music. Empirical investigation in this area has consequences for the entire profession of music/music education; from day-to-day teaching and band festivals to the "Madison Ave" advertising industry. Music educators make judgements as a matter of course while either evaluating a classroom music performance or deciding on the purchase of a piece of music. Clues revealed through research as to the process used to make these judgements give insight as to what should be believed about people's judgements, when these judgements should be believed, and who makes "the best" judgements.

While it would seem appropriate that music performances be adjudicated by professionals (experienced musicians in the approprate field), several studies have suggested that judges have difficulty obtaining reliability with each other (Burnsed, Hinkle & King, 1985; Burnsed & King, 1987) and with themselves (Fiske, 1983). These outcomes could possibly be attributed to the forms the judges used, but even highly practiced, experienced musician-judges rarely show better than 25% consistency on their own music judgements, (i.e., their ability to rate the same performance the same way a second time). Fiske (1983) reports that average reliability in this experienced group is between nine and sixteen percent.

On the other hand, musically naive audiences of "nonmusicinas" make judgements, ratings, choices, and decisions about music; sometimes with a high degree of accuracy, reliability and consistency (Wapnick, 1976). The "Music Industry" not only uses these mass audience demographics to determine marketing strategies, but by doing so, further manipulates music preferences and judgements of the public (Alpert, 1982).

With this seeming disparity between music experts whom the literature tells us have questionable reliability (with themselves and/or with others), and the members of the mass music market

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who sometimes seem surprisingly consistent, questions arise as to what can be believed about professionals making music judgements.

JUDGEMENTS

Professional musicians and teachers serving as adjudicators make judgements about and for others. Across our nation, music festivals are held and students performing music solos and ensembles are being subjected regularly to the process of judging, rating and selection. Most states have district and/or state festivals at which professional judges are asked to provide evaluations of solos and ensembles on the basis of some "uniform" scale or criteria.

There does appear to be reliability on "overall" music judgement, called "musical effect" on the MENC adjudication forms. Fiske (1975) first demonstrated that ratings for a trait "overall" applied by a panel of seven brass judges versus seven non-brass judges were not significantly different. Since then, similar findings have been reported for keyboard, voice and brass judging. Burnsed (1987), described strong relationships among ensemble ratings:

> A correlation of all ratings, captioned and final, were so closely related as to represent a single global performance rating. The caption rating called "musical effect", however, had the highest correlation with the final rating. This correlation, $r = .91$, is almost perfect. (p. 10)

He goes on to state that "overall effect" is also influenced by a group's appearance, posture, position of the music stands, conductor's style, and the preceding ensemble's performance. This research, it would seem, casts doubt on the efficacy of caption ratings (specific rating categories) when adjudicators rate student ensembles.

DCamp (1980) asked forty-seven "qualified judges" to use a 117 item rating scale to evaluate forty-seven different pairs of recorded high school band performances. Subsequent evaluation determined that five factors were important to them: 1. Tone-Intonation, 2. Balance, 3. Musical Interpretation, 4. Rhythm, and 5. Technical Accuracy. Judges still insist, however, that categorized critiques are the essence of an adjudicator's responsibility to the music group judged (Neilson, 1973).

PREFERENCE

Music preference is based upon judgements of various kinds (Price, 1987). Recently Etters and Burnsed (1989) have paraphrased LeBlanc (1982) and stated that "as the listener matures with age and cultural experience, the influences of the stimuli that determine musical preference will also change". In addition to age being an important factor in the determination of music preference, two primary influences on youth culture preferences are radio and television broadcasts, In 1981, cable television introduced MTV (Music Television) to the consumer public. Burnsed and Etters (1988) found that when watching MTV, teenagers rated "mood" higher than what the authors termed "more formal musical elements," (such as categories of "caption rating" on adjudication forms). They also substantiated that there is a "visual effect" operating within young people's musical preferences. Conformity to peer group seems to be another factor controlling preferences of young people (Furman & Duke, 1987; Killian & Kostka, 1986).

Music judgements and music preference are a natural and normal part of daily life to many...both musican and nonmusician, young and old!

> Music educators traditionally judge, rank order, and rate students as a matter of course. It is necessary to do so in order to prescribe further learning for students. But often, untrained musicians (sometimes called audiences) make these very discriminating judgements about music performances. Even the least skilled music student is capable of sensitive aural judgements which allows him to discern from among his peers, who are the fine

> students musicians; and further, to discriminate between a good (even great) student performance and a professional performance. People are rarely wrong in these judgements. In fact, these fine music discriminations are often made by young people because of the great number of music performances presented daily by the media, in the form of radio and television broadcasts and recorded performances. The consensus as to what is worthy musically seems to be determined by a performace standard which is generally and publicly recognized, because of previously experienced (learned) musical standards". (Wagner, 1979).

"Captioned ratings" is a collective term used to describe all the rating categories on adjudication forms. In this study, the term "composite critique" is used to describe the mean of all the captioned ratings except "musical effect", which is a separate rating number containing an "overall" performance judgement.

The present study was designed to investigate how college age musicians and nonprofessional musicians and young listeners respond to the task of adjudicating "pop" music performances using the "standard" adjudication categories found on the forms distributed by the Music Educators National Conference. Further, it was constructed to determine how ratings of nonprofessional musicians, with (possible) strongly formed, peer influenced preferences, who were asked to act as adjudicators of "pop" performances, would compare to the ratings of college age musicians. Also of interest was whether "caption ratings," as compared to "musical effect" ratings, would result in a relationship similar to that found by Burnsed. Examining the possible effect of the presence of captioned ratings on the musical effect rating was one additional objective of this research.

This study was designed to determine differences between the ratings of three populations of viewers; elementary and junior high students (grades 5-9), college age musicians, and adult nonmusicians, on three videotaped pop music performances.

Forms were designed to test differences between "musical effect" category ratings and other captioned ratings (composite critique).

THE EXPERIMENT

Video Taped Performances

Three performances were selected from the 1986 season of the syndicated television show "Star Search". Performances from this show were chosen because of the consistently near-professional performance quality, yet relative obscurity, of the performers. A male singer, a female singer, and a pop/rock band were selected, and the videotaped performances edited into a format which gave a five second cue "listen", then Performance 1, a male "pop" vocal solo. The words "complete your evaluation" followed. The same format for Performance 2, a female "pop" vocalist, and Performance 3, a "pop/rock" band followed. Each performance was approximately three minutes in length. The tape was paused between performances to allow as much time as was needed for the completion of the form.

Rating Forms

Harding's (1987) survey made it apparent that MENC Adjudication Forms were the most widley used rating devices in the United States. For that reason, it was decided to model the experimental forms after the Vocal Form and the Jazz Ensemble Form from the MENC packet. The experimental "long Form" was designed to contain the same caption ratings and explanations as the MENC "Vocal Solo" form with the exception of the category, "Other factors" which was omitted. Caption categories were as follows: Tone, Intonation, Diction, Technique, Interpretation, and Musical Effect. The pop/rock form was designed after the MENC "Jazz Performance" form. While the following categories were included on the MENC form, Balance/Blend, Intonation, Phrasing, Dynamics, Time, Interpretation, Precision, Jazz Excitement, Fresh Ideas, Color/Texture, Programing, Stage Presence, Choice of Material, and Communication, four categories were dropped on the experimental form, It was determined by a small pilot study, as in the case of "other factors" on the Vocal Form, that "precision", "jazz excitement", "programming, and "choice of materials" caused more confusion among children and nonmusicians than the other categories. A "musical effect" category was added as the last category on this form.

A "Short Form" was created which contained a single category, "musical effect". It was constructed to look similar to the "Long Form". During administration of the experiment, forms were pre-counted, into packets containing half Long Forms and half Short Forms. The Long Forms were on the top of the stack and were always passed out first. In this way, attention to the fact that there were two kinds of forms was minimized. If a question arose as to differences, subjects were told to "just complete their own forms."

SUBJECTS

The sample of elementary and junior high school (El/JH) students was obtained from the Miami, Florida area, and was evenly distributed among grades 5 - 9. There also was an even distribution among Anglo, Hispanic, and Black (both native American and Caribbean) populations as well. The 203 college aged musicians used as subjects included both graduate and undergraduate music students at Florida International University, the University of Alabama, and Florida State University.

The adult nonmusician group was comprised of subjects representing several subgroups. For purposes of this study, university students not enrolled as music majors were determined to be in the adult nonmusician category. A group of elementary teachers was given the experimental treatment during a faculty meeting, and a church gathering of elderly people was included in this sample, as well. The total group of adult nonmusicians included 163 subjects.

THE EXPERIMENTAL SESSION

In all, 541 people served as experimental subjects. The rating forms were passed out by the person in charge of the particular group, and the standard set of instructions read aloud. Questions were answered, the tape was started, and subjects viewed the color video tape on a standard television set or monitor. The tape was paused between selections to allow subjects a comfortable amount of time to complete their adjudication form for each presentation. Forms were than collected and returned to the experimenter for data analysis. Table I shows the total number of subjects by group and type of form.

RESULTS

Table 1. Subject Distribution Among Groups And Forms

	Short Form	Long Form	Overall
El/JH	88	87	175
Musician	100	103	203
NonMusician	79	84	163
Overall	267	274	*N* = 541

Two analyses were performed. First, Long Form ratings for each individual music characteristic (with the notable exception of the final overall "Musical Effect" category), were summed and means computed to obtain a "Composite Critique" score. These

"Composite Critique" scores were then compared to the last category on each form (and the only category on the Short Form), the "Musical Effect" scores, to see if they were statistically different from each other.

Then "Musical Effect" scores on the Short Form were compared to the same category on the Long Form to see if attending to individual and discrete categories while rating performance affected the "Musical Effect" scores on the Long Form.

Long Form Data

T tests - between "Musical Effect" and "Composite Critique"

In all, nine different scores were obtained by subtracting the mean of the Composite Critique from the mean of the Musical

Table II. Long Form Weighted Means & Differences

	Overall Musical Effect *M*			Composite Critique *M*			Differencebetween Musical Effect & Composite *M*'s		
Presentation	1	2	3	1	2	3	1	2	3
El/JH Sch	2.64	2.14	2.67	2.56	2.32	3.10	.07	-.8	-.42*
Musician	2.36	2.40	3.48	2.65	2.41	3.20	-.30*	-.01	.28*
NonMus.	2.59	2.25	3.28	2.48	2.05	3.10	.11	.20*	.17*

* $p < .05$ 1 = Best 5 = Worst

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Effect scores on the Long Form; i.e. one for each of three music presentations for three groups. Significant differences were found for five of these nine values (see Table 2).

For the El/JH students, the mean Musical Effect score for Presentation 3 (the Pop/Rock Ensemble) differed significantly from their Composite Critique, by -.42, with the Composite Critique rated higher (worse) than the Musical Effect score (*p* <.0016).

For the College Age Musician group the mean Musical Effect score for Presentation 1 (the Male Vocalist) differed significantly from their Composite Critique score by -.30, with the Composite Critique rated higher (worse) than the Musical Effect (*p* <.0001). For Music Presentation 3 (Pop/Rock Ensemble), the reverse was true; the Composite Critique score was significantly lower (better) than their Musical Effect score (difference = .28, *p* < .0001).

For the Adult NonMusician group, the mean Musical Effect score for presentation 2 (Female Vocalist) and 3 (Pop/Rock Ensemble) differed from their Composite Critique scores, with the Composite Critique rated significantly lower (better) than the Musical Effect score in both cases (Presentation 2: difference = .20, *p* < .0076; Presentation 3: difference = .17, *p* <.0145).

ANOVA Between Music Presentations

For each music presentation, an Analysis of Variance was performed to compare mean differences between the Composite Critique and Musical Effect scores among the three groups. ANOVAs were significant for all three music presentations (Presentation 1: *p* <.0018, Presentation 2: *p* <.0036, Presentation 3: *p* <.0001). Tukey's pairwise comparison tests on the mean differences at the .05 level revealed the following:

1) On Presentation 1 (male vocalist) Musicians' mean difference score (-.30) was significantly lower than the Adult Nonmusician (.11) and El/JH Students (.07), with the College Age Musicians rating the Musical Effect lower (better) than the Composite Critique.

2) On Presentation 2 (female vocalist), the El/JH Students (-.18) differed significantly (and rated the Musical Effect lower [better] than the Composite Critique score) from the Adult Nonmusician group (.20), where the reverse was true (*p* <.0036).

3) On Presentation 3 (pop/rock ensemble), the El/JH Students (-.42) differed significantly (and rated the Musical Effect lower [better] than the Composite Critique score) from both the College Age Musician and Adult Nonmusician groups (Musician .28 & Nonmusician .17), (*p* <.0001).

Averages of Composite Critique Means Among 3 Groups

Only on Presentation 2 (female vocalist), did the average of the Composite Critique differ significantly among the three groups (*p* <.0383). Tukey's pairwise comparison test showed that Musicians (2.41) scored the Composite Critique significantly higher (worse) than Nonmusicians (2.05).

Musical Effect Among 3 Groups

On Presentation 3 (pop/rock ensemble) the Musical Effect means differed significantly among groups (*p* <.0001), with Tukey's pairwise comparison test showing that the El/JH Sudents (2.67) scored the Musical Effect significantly lower (better) than the other two groups (College Age Musician 3.48 & Adult Nonmusician 3.28; *p* <.0001).

Musical Effect Data - Between Forms

Table III. Least Squares Means Summary Table
for Musical Effect Scores

Presentation	1			2			3		
	Male Vocalist			Female Vocalist			Pop/Rock Band		
	Long Form	Short Form	Over All	Long Form	Short Form	Over All	Long Form	Short Form	Over All
El/JH Sch	2.61	2.84	2.73	2.16	2.30	2.27	2.65	3.91	3.28
Musician	2.34	2.89	2.61	2.39	2.76	2.58	3.40	3.61	3.50
NonMus.	2.57	2.58	2.58	2.26	2.13	2.20	3.31	3.30	3.30
Overall	2.51	2.77		2.27	2.24		3.12	3.60	

1 = Best 5 = Worst

A two-way Analysis of Variance (on weighted cell means) was conducted on the "Musical Effect" scores between the Long Form and the Short Form and the three groups for each music presentation.

On Presentation 1 (male vocalist), there was a significant difference between forms on the Musical Effect variable (*p* <.0003). The mean score for Long Form (2.51) was lower (better) than for Short Form (2.77).

On Presentation 2 (female vocalist), there was no significant interaction or differences between forms. There was a significant difference among the three groups (*p* <.0011). The post hoc Least Significant Difference Test using the .05 level of confidence showed that College Age Musicians scored higher (2.58) than did the other two groups. (The Least Significant Differences Test was chosen, since analysis was performed on cells with unequal sample sizes). On Presentation 3 (pop/rock ensemble), There was a significant form by group interaction (*p* <.0001). Therefore, main effects were not examined. The El/JH Long Form mean score was lowest (2.65, rated best) and was significantly different from all other means. In addition, the El/JH Students Short Form rating for this performance was highest (3.91, rated worst) and was significantly different from all other means except for the College Age Musician Short Form mean (3.61). No other pairs of means differed.

DISCUSSION

There are no clear indications that these data support findings already extant in the literature. In five of the nine comparisons between a "Composite Effect" rating and an overall "Musical Effect" rating, subjects significantly disagreed with their own assessments (Table II). Therefore, it would be difficult to make assumptions about an "Overall" score taking the place of the individual assessments made on caption ratings of adjudication forms.

In summary, the analysis of data from the Long Form revealed that the El/JH Students rated the "pop/rock" band's composite score as worse than the musical effect score. College Age Musicians rated the male vocalist's composite score as worse than the musical effect score, but the band's musical effect score as worse than their composite score...just the opposite of how the El/JH Students rated them. Adult Nonmusicians rated the female vocalist's and the pop/rock ensemble's "musical effect" score as worse than their Composite score.

Results of the Analysis of Variance on the Long Form data showed no clear pattern about groups or presentation.

When comparing Musical Effect data between Long and Short Forms, only on Presentation 1 (male vocalist), can clear differences be found.

It may be interesting to note that for overall "musical effect", the very least liked performance (mean = 3.91), was the pop/rock ensemble...by the El/JH group. Musicians scored the lowest (most liked) mean (2.34) on the Long Form for the male vocalist.

For The Composite Critique, College Age Musicians score the highest (least liked) mean on the Pop/Rock ensemble (3.20), while the Adult Nonmusician group rated the female vocalist (2.05) lowest (most liked).

It is uncomfortable when data neither fall into neat patterns nor remain consistent with results of similar investigations reported in the literature. When this happens it may be of some value to speculate about what may have affected the results. There are some issues concerning the variables chosen for study.

The music presentations in this study are clearly different from those music performances usually adjudicated in a "music education" sense and in past research studies. Here, rather than school solo and ensemble performances, popular song presentations were subjected to formal rating procedures. However, it must be noted that music presentation were taken from a television show during which "professionals" rate these very performances. Because of the nature of the presentation, it is possible that subjects rated performances with more "preference" than with "judgement". However, as stated in the introduction, while both have relevance to the evaluation process, no clear distinction has been made as to the nature of each of these terms. Therefore, it would seem that no conclusions on that issue can be drawn here.

Results of this study add more confusion to already disparate results reported in the literature regarding the adjudication of music performance. Concensus of expert opinion will continue to be the primary method of music performance evaluation. Clues as to how that process operates continue to be elusive. It would seem an understatement to conclude with the admonition that "further research in this area is needed".

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AN ANALYSIS AND COMPARISON OF FOUR-YEAR OLD AND THIRD GRADE CHILDREN'S VOCAL, FINGER SCHEMA, AND PIANO ABILITIES

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Doctor of Philosophy in Music Education, 1990
University of Missouri-Columbia

Abstract

This study was designed to examine four-year old and third grade males' and females' responses to three tests: Vocal, Finger Schema, and Piano. The study also included an examination of the effects of two environmental variables on vocal and piano responses: presence of a keyboard in the subject's home, and other family members playing piano. Finally, the study examined correlations between vocal and piano ability, and finger schema and piano ability.

Sixty-three four-year-olds and 63 third graders (*N*=126) participated in the study. Each child echo sang seven short melodies that had been pre-recorded (Vocal Test). Their responses were recorded on audiotape. Each child imitated a series of 12 finger patterns which involved naming finger numbers (Finger Schema Test), and imitated a series of 12 items at the piano keyboard (Piano Tests 1 and 2). Both finger and piano activities were modeled by the examiner, and the subjects' responses were recorded on videotape.

Results of a Multivariate Analysis indicated that there were statistically significant differences between four-year-olds and third graders on each of the variables (Vocal, Finger Schema, and Piano Tests), but there were no significant differences between males and females, and no significant interactions. Neither the presence of a piano in the home nor other family

members playing piano had a significant overall effect on the Vocal or Piano variables. Correlation of vocal abilities to piano abilities was low to moderately positive for four-year-olds, and low for third graders. Correlation of finger schema awareness to piano abilities was moderate to moderately high in both age groups on the Piano Test 1, and low on the Piano Test 2.

A STUDY OF UNITED STATES COLLEGE AND UNIVERSITY TRUMPET INSTRUCTORS REGARDING EMBOUCHURE, PRACTICE HABITS, AND OTHER SELECTED TOPICS

Rene E. Bernard
Master of Music Education, 1990
University of Missouri-Kansas City

Abstract

The purpose of this study was to determine the techniques and materials that college and university trumpet instructors recommend to the students in their studios. Areas that were researched included mouthpiece placement, pivoting, warm-ups, embouchure, breathing, rest periods, range and endurance, method and pedagogy books, tongue arch, and practice habits.

Surveys were sent to 680 trumpet instructors throughout the United States. Two hundred and eighty-nine (43%) useable surveys were returned. The survey also requested the number of years' teaching from the instructor, the number of students enrolled in each studio, and the number of minutes per week each student spent in lessons.

In reviewing the survey instrument, it was apparent that a majority of trumpet instructors are in agreement on the following areas: mouthpiece placement, definition of "pivot", elements of a warm-up, tongue arch (including use of consonants and/or vowels), pedal tones, execises to be typically included in a daily practice routine, use of pedagogy books, developing a concept of sound, and preferred mouthpiece and instrument types or brands.

THE EFFECTS OF SYSTEMATIC RHYTHM READING INSTRUCTION VERSUS RHYTHM DRILL ON THE PITCH AND RHYTHM SIGHT-SINGING PERFORMANCE OF HIGH SCHOOL CHORAL ENSEMBLE MEMBERS

Johnson Blythe Egbert
Doctor of Philosophy in Music Education, 1990
University of Missouri-Columbia

Abstract

This study was designed to examine the effects of systematic rhythm reading instruction versus rote rhythm drill on the sight-singing skills of high school choral ensemble members. Tenth through twelfth grade subjects (N=44) were randomly assigned to one of two groups: Experimental (Rhythm Reading Instruction) or Control (Rote Rhythm Drill). Each student participated in an ensemble sight-reading pretest, 22 group instructional sessions, and individual and ensemble sight-reading posttests. Data obtained on individual posttests were analyzed using a Repeated Measures Analysis of Variance Test. While there were no statistically significant differences between treatment groups, subjects scored significantly higher on the rhythm reading component than on the pitch reading component. Both groups experienced substantial gains in ensemble sight-reading from pretest to posttest.

BRAZILIAN CHORAL DIRECTORS' REHEARSAL CONDITIONS AND ATTITUDES TOWARD CHORAL METHODOLOGY: SURVEY ANALYSIS AND RECOMMENDATIONS

David Bretanha Junker
Doctor of Philosophy in Music Education, 1990
University of Missouri-Columbia

Abstract

This study had two principal purposes. The first was to survey Brazilian choral directors to document conditions under which choirs operate, and to assess attitudes toward rehearsal techniques and preparation. The second purpose was to provide recommendations regarding the concerns and interests expressed by the survey respondents.

The design of this study comprised six major components: (a) a review of the literature; (b) the development of the questionnaire; (c) the distribution of the questionnaire; (d) an analysis of the questionnaire; (e) an interpretation of the analysis; and (f) recommendations.

The survey analysis revealed that Brazilian choral directors consider five areas to be of great importance to the development of choral music in Brazil. These include preparation of the conductor for rehearsals, organization and pace of the rehearsal, development of choral tone, study of choral literature, and types of choral performances.

Based upon the survey results, the author recommended the establishment of a more systematic approach to choral methods and rehearsal techniques, as well as the expansion of literature in the Portuguese language related to choral methodology. While the study represented a first step toward developing material designed to improve Brazilian choral music education, it seems clear that further studies are necessary.

AN ANALYSIS AND ADAPTATION OF BRAZILIAN FOLK MUSIC INTO A STRING METHOD COMPARABLE TO AMERICAN MODELS FOR USE IN THE BRAZILIAN MUSIC EDUCATION SYSTEM

Linda L. Kruger
Doctor of Philosophy in Music Education, 1990
University of Missouri-Columbia

Abstract

The purpose of this dissertation is to describe the creation of a string method that incorporates Brazil's indigenous folk and art music. The trials of Brazil while trying to institute a string program are described in order to establish the need for a string method using the music of Brazil. A discussion of the Brazilian people's interest in the role of folk and art music is also provided.

In order to develop the string method, entitled "Iniciando Cordas Atraves de Folclore" ("Beginning Strings Through Folk Music"), it was determined that an appropriate model of pedagogical teachnique and sequencing should first be identified through an examination of American string methods. An analysis of folk music and its historical relevance to music education was conducted, as was its role in American string methods. In this area, the foremost United States music education methodologies were reviewed. This analysis of string methods revealed the unique evolution and characteristics of the string methodologies used in the United States public schools today.

The second step in developing a Brazilian folk music string method required determining the appropriate sequence of musical concepts for the Brazilian students. This ordering of technical material was determined by developing a comprehensive criterion list.

Finally, a discussion follows describing how the folk music in Brazil was located and incorporated into a Brazilian String Method. This discussion illustrates the evolution of the Brazilian String Method, and how it was implemented into Brazilian class instruction. The final version of the Brazilian String Method, translated into English from Portuguese, appears in the Appendix.

A COMPARISON OF THREE APPROACHES TO TEACH NOTE-READING AND NOTE LOCATION ON THE PIANO KEYBOARD TO CHILDREN, AGES FOUR TO SIX

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University of Missouri-Kansas City

Abstract

Piano teaching methods have not been submitted to empirical research to compare respective effectiveness. Modern piano methods are categorized by the order in which the written notes are presented. Many pedagogues hold opinions concerning which presentation order is the most effective, but these opinions have not been researched.

The ability of young children to read notes on the staff is also disputed. This study sought to address both issues by comparing representative curricula taught to groups of four-to-six year-old children, to determine the effectiveness of the note presentation formats and the subject's ability to learn note-reading skills.

The study was a quasi-experimental, two-factor comparative design. Three curricula were created which paralleled the note-presentation format of the three primary methodological approaches.

Seven pre-schools in the Kansas City metropolitan area participated in the study. Eighty-nine students completed the seven-week course.

Following the course, students were skill-tested on their note-naming/location ability. A computer program written specifically for this study analyzed student accuracy and response times, and stored testing data.

Null hypotheses constructed for the study predicted no difference between test groups, ages, or response times. No significant difference (*p*<.05 level) was found among the three test curricula, the skill level of different ages, the most easily - recognized notes, or the response times for the three test groups. The aggregate mean skill levels at note-naming/location was 67%.

A COMPARATIVE STUDY OF FOUR METHODS OF TEACHING MUSIC READING TO FIRST GRADE CHILDREN

Cynthia M. McCuistion
Master of Music Education, 1991
University of Missouri-Kansas City

Abstract

Authorities in the field of music education are in agreement that music reading is necessary for development of musical growth. Numerous methods have been proposed to teach music reading objectives, but few have been systematically researched. Thus, a need for research in the area of music reading instruction is evident.

The purpose of this study was to determine the relative effectiveness of four methods of teaching music reading. Subjects were 110 first grade children, evenly distributed among five classes. Four classes were randomly assigned to a method of music reading instruction following a tonal/rhythmic recognition pretest (designed by the author), and an attitude inventory. The fifth class served as a control group.

The four methods in this experiment involved varying hierarchical strategies in the areas of music notation, and rhythmic and melodic presentation. Method 1 and 2 subjects were presented rhythmic and melodic learnings within the same class period. However, standard notation only was employed in Method 1, and a hierachical strategy of notation was employed in Method 2. Method 3 and 4 subjects were presented rhythmic and melodic learnings on separate occasions. Like the two methods previously though, standard notation was used in one and the hierarchical strategy was used in the other.

Following eight weeks of instruction, students were given a tonal/rhythmic recognition posttest and an attitude inventory. The tonal/rhythmic recognition test, designed by the author, consisted of 36 multiple-choice items in which subjects were required to choose one of three notations that represented an aural stimuli. The attitude inventory measures students' attitudes toward 'generic' music activities that commonly occur in the classroom.

Results of the analysis showed: (a) significant differences in posttest scores existed only between the experimental groups and the control group [F (4,105) = 12.89, *p*< .05]; (b) significant gains in tonal/rhythmic recognition abilities were exhibited by the experimental groups (*p*< .05); (c) classes given instruction via Methods 1 and 3 scored significantly higher on posttest items played twice; (d) all experimental groups made significantly fewer rhythmic errors than melodic errors on the tonal/rhythmic recognition posttest; (e) no significant attitude differences existed among the five groups [F (4,105) = 1.92, *p*< .05]; and (f) no significant differences existed between attitude pretest and posttest scores in all five groups.

AN ANALYSIS OF ATTITUDES AND BEHAVIORS OF METROPOLITAN KANSAS CITY ELEMENTARY MUSIC EDUCATORS REGARDING MULTICULTURAL MUSIC EDUCATION

Patricia C. Sands
Master of Music Education, 1990
University of Missouri-Kansas City

Abstract

The purpose of this study was to discover the values, attitudes, and behaviors of elementary music educators in metropolitan Kansas City toward multicultural music education. Rural, urban, and suburban music educators in four counties were surveyed. School and teacher names were obtained from a school listing and through telephone calls. Schools were classified according to rural, urban, and suburban categories by three educational authorities. A total of 204 surveys were mailed, with 133 useable surveys returned (65%).

Significant differences ($p < .05$) were found in (a) the use of multicultural music between teachers with varying percentages of ethnic groups in their classes; (b) the implementation of multicultural music among urban, suburban, and rural elementary music teachers; (c) the inclusion of multicultural music between elementary general music classes and public performances; and (d) the use of multicultural music in music classes between music educators with and without training or workshop attendance in multicultural education.

Teachers with undergraduate training in multicultural education indicated feeling more comfortable and more prepared in using multicultural music than did teachers without such undergraduate training. Thirty-six percent of the teachers surveyed experienced training or workshop attendance in multicultural education. All

teachers surveyed agreed that multicultural music should be included in the music classroom. Teachers in classroom settings with high ethnic representation indicated choosing music and materials based upon the ethnic make-up of their classes. Sixty-five percent of the respondents surveyed used the text as their main resource for multicultural music.

Results of the study could be beneficial to music educators, teacher-training institutions, administrators, and all involved in multicultural education.

CONTEMPORARY MUSIC FOR THE NEW AMERICAN CHILDREN'S CHOIR

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Webster University

Numerous children's choirs have been founded in the United States during the past twenty years. Some of the most successful choirs have been established by university professors in the field of music education. Other choirs are sponsored by community and private organizations.

Although such groups might be musically content to perform treble choir masterworks of the past, a substantial number of children's choirs have generated a new and exciting repertoire by commissioning well-known American composers to write choral music for children. In many cases the composer is also a university professor. Others are affiliated with American symphony orchestras, are free-lance composers, or in some cases, children's choir directors.

The purpose of this project has been to document musical works commissioned in recent years and to collate and disseminate the information so that interested children's choir directors in the United States and throughout the world may have access to this important repertoire.

(Presented at the 1990 ISME Conference, Helsinki, Finland).

INSTRUCTION TO CONTRIBUTORS

Editorial Policy and Procedures:

The editorial committee welcomes contributions of a philosophical, historical, or scientific nature which report the results of research pertinent in any way to instruction in music as carried on in the educational institutions of Missouri.

Manuscripts are reviewed by the editorial board in a blind review process. The collective recommendation of the reviewers determines whether a manuscript will be accepted for publication. Manuscripts submitted for review must not have been published nor be under consideration for publication elsewhere.

The editorial committee subscribes to the Research Publication/Presentation Code of Ethics of the Music Research Council of the Music Educators National Conference and the National Research Committee of the National Association for Music Therapy.

Format and Style:

Articles should be typewritten with double spacing on 8 1/2 x 11 paper. Articles normally should not exceed 20 pages in length. Manuscript style should follow recommendations of the *Publication Manual of the American Psychological Association* (3rd ed., 1983). All figures and tables should be submitted camera ready.

To assure anonymity during the reviewing process, author's name(s) and address(es) should appear on a separate cover page only. Names and other material in the text which might identify the author(s) should be avoided.

Authors should submit four copies of their article to the editor. Contributors will be notified of the decision of the editorial board.

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MISSOURI JOURNAL OF RESEARCH IN MUSIC EDUCATION

Number 29

1992

Published by the
Missouri Music
Educators Association

MISSOURI JOURNAL OF RESEARCH IN MUSIC EDUCATION

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MISSOURI JOURNAL OF RESEARCH IN MUSIC EDUCATION

Published by the Missouri Music Educators Association

Number 29 1992

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PREFACE

The *Missouri Journal of Research in Music Education*, published by the Missouri Music Educators Association, is devoted to the needs and interests of teachers of music in Missouri and the nation. This issue is the twenty-ninth.

The members of the editorial committee are grateful to those readers who have written suggestions concerning the content of past issues and request that comments and suggestions again be sent to the editor concerning the content of this issue. We strive for a reasonable balance among music theory, history, philosophy, aesthetics, and pedagogy.

We express our deep gratitude to the Missouri Music Educators Association for their financial support to make it possible to continue to publish the *Missouri Journal of Research in Music Education*.

The Editorial Board

The *Missouri Journal of Research in Music Education* (ISSN 0085-350X) is published annually by the Missouri Music Educators Association. Copies can be obtained by sending $2.00 (cash, check, or money order, payable to Missouri Music Educators Association) to the editor. Inquiries relating to the availability and cost of back issues should be directed to the editor.

ELEMENTARY CHILDREN'S ABILITY TO RECOGNIZE MAJOR/MINOR MODE

Marilyn J. Kostka Dian L. Riemer
Eanes Independent School District, Austin, Texas

Correct identification of major/minor mode is generally considered to be one of the basic skills in the elementary music curriculum. Aural recognition of major/minor mode, however, may be more difficult for children to master than the visual and written presentations in most elementary music books. While many teachers and writers use non-musical terms such as "happy" and "sad" to facilitate aural identification of modes, (Machlis, l984; Forney, 1990), one might wonder if the use of non-musical terminology confuses rather than helps children understand different modes.

It is well-documented in recent research that children can hear elements and changes in music but are unable to express correctly what they are hearing without instruction in music terminology (Flowers, 1984; Hair, 1981; Hair, 1982; Hair, 1987; Kostka, 1984; Pflederer and Sechrest, 1968; Van Zee, 1976; Zimmerman, 1971). Of specific interest to this investigation was whether use of non-musical or musical terms were more helpful to children in identification of modes.

This study consists of two related parts, each conducted at the same school using approximately the same population of students, with the studies carried out one year apart. Study 1 was designed to examine whether identification of major and minor modes is more accurate when paired with non-musical verbal cues than when students simply learn the modes by using the terms "major" and "minor". Most research on children's discrimination abilities has tended to focus on one element at a time; however, since music involves simultaneous interactions of several elements, the second part of this investigation (Study 2) was designed to learn whether aural discrimination of mode would be affected if presented concomitantly with two other elements (tempo and register).

In a series of studies investigating responses of preschoolers to elements of music, Sims (1988; 1991) reported that while pre-school subjects did not appear to be ready for tasks requiring attention to more than one music concept, this ability might be acquired through maturation and experience. Study 2 was intended to examine this question with older students (elementary); specifically whether aural identification of major and minor sounds is affected by the musical elements, tempo and register.

The questions of experimental interest to these two studies were:

1. Will non-musical verbal cues facilitate children's ability to identify major and minor more than the use of traditional terminology?
2. Will there be a difference in children's ability to identify each mode when major and minor chords are presented along with changes in tempo and register?
3. Will age be a significant factor in children's aural discrimination of modes?
4. Which, if either, of the added elements (tempo and register) will most strongly affect the students' ability to discriminate major and minor modes?

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STUDY 1

Procedures

Twenty-four intact classes from a suburban elementary school in Austin, Texas, served as subjects for this study, with equal division into grades three, four and five. The classes were taught by two music specialists, who administered the instructions and tests during regular music classes. Since both teachers followed the same lesson plans and procedures, all classes had received similar instruction in classroom music.

The subjects (*N*=523) were divided into two equal groups comprised of four classes in each grade (Group A; *n*=268, Group B; *n*=255). All procedures and evaluations took place during equal and predetermined portions of the regularly scheduled music classes.

The investigation consisted of two brief (10 minute) periods of instruction on consecutive days of music classes. During each instructional period, the teacher asked the students to listen to twelve sets of triads, played first as broken chords and then as intact chords. The chords were randomly divided into six major and six minor. Group A heard the teacher label each chord as "major" and "minor" prior to playing it, while Group B heard additional non-musical cues, designated to be "bright" for major and "dark" for minor. These cues were selected as alternates for "happy" and "sad" with which most children are familiar.

Following two days of practice, a test was administered on the third day with all classes following identical testing procedures. Twelve triads, prerecorded on an electronic keyboard, were played for the subjects, in the same manner as the practice presentations, but in a different order. Subjects were asked to write the words "major" or "minor" following each chord and were allowed adequate time to complete their answer before going on to the next question.

Results

Data were the number of correct responses on the posttest for each student. Means were calculated for each class, and Table 1 presents the averages per class for each grade.

Table 1

Mean Scores per Class According to Grade Level (12 Possible Correct)

Grade	Three	Four	Five
	6.65	9.59	9.04
	7.86	7.04	7.46
	9.26	8.25	8.45
	8.61	9.08	9.38
	8.94	8.68	8.34
	7.94	9.46	8.00
	10.23	7.19	8.00
	8.60	8.14	9.14

A Kruskal-Wallis One-Way Analysis of Variance test indicated that there was no significant difference among the mean scores for each grade level ($H = .0 [3,24]$, $p > .99$).

A comparison of mean scores for each of the two experimental groups, regardless of grade level, is shown in Table 2.

Table 2

A Comparison of Mean Scores Between Conditions

Condition A Musical Terminology	Condition B Non-musical Terminology
6.65	8.94
7.86	7.94
9.26	10.23
8.61	8.68
9.59	9.46
7.04	7.19
8.25	8.14
9.08	8.34
9.04	8.00
7.46	8.00
8.45	9.14
9.38	9.01

A Mann-Whitney U Test was performed on the ranked means, and results of this test indicated no significant difference $p > .50$ between the means of Group A and Group B ($U = 69$).

STUDY 2

Procedure

The data for Study 2 were collected following a two-week period of instruction during which children (N=396) in grades three, four and five (same school as Study 1) practiced hearing and identifying major and minor modes. This instructional period was intended to ensure that the students understood the correct music terminology prior to testing. As in Study I, examples included major and minor triads, played first melodically and then harmonically. The students also heard entire songs played and labeled as major and minor tonality.

During regular classes, two music specialists administered a listening post-test to all students. The test was pre-taped so that all children heard the same examples: six major and six minor chords randomly paired with high, medium and low registers and randomly assigned to a slow or fast tempo. A total of twelve items were included. Thus, each item was a combination of three music elements (mode, tempo and register). Table 3 presents the order and combination of the test examples heard by the children.

Table 3

Combinations and Order of Twelve Test Items

	Mode	Register	Tempo
1.	major	high	slow
2.	minor	medium	fast
3.	major	medium	fast
4.	minor	low	slow
5.	minor	high	fast
6.	major	medium	slow
7.	minor	low	fast
8.	minor	medium	slow
9.	major	low	fast
10.	minor	low	slow
11.	major	high	fast
12.	minor	high	slow

Every combination of the three variables was used, and both teachers used an identical tape for their classes. Tempos selected were mm=60 (slow) and mm=120 (fast). For identification of register, the examples were divided into and played within three separate octaves; low = C2-C1; medium = C - c and high= c1 to c2. Following each example, students were told to write either "major" or "minor", as in Study 1, and the number of correct responses for each student was tabulated.

Results

Total correct responses were counted and percentages of correct answers were compared across grade levels. A Kruskal-Wallis One-Way Analysis of Variance indicated no significant difference in ability to identify correctly the chords among the three grades ($H = .6$ [3,24], $p > .70$).

Each combination of variables was separated into "major" and "minor" categories in order to compare the effects of tempo and register for each chord. Table 4 shows the subsets of elements, and the number of correct responses for each across all grade levels.

Table 4

Differences Between Correct Scores for Major and Minor when Other Variables Remain Constant (All Grades: *N*=24 classes)

	Major	Minor	Difference
high-fast	330	186	144
medium-fast	292	346	54
low-fast	227	312	85
high-slow	357	222	135
medium-slow	245	218	27
low-slow	176	325	149

Analysis of the differences between major and minor, when the other two variables were matched, revealed a significant difference ($\chi^2 = 133.58$, [5], $p. < 001$).

Table 5

Comparisons of Total Correct Responses for Each Mode Across Register and Tempo Categories

	Major	Minor
Slow		
high	357	222
medium	245	218
low	176	325
Total:	778	765
Fast		
high	330	189
medium	292	346
low	227	312
Total:	849	844
High		
slow	357	222
fast	330	186
Total:	687	408
Medium		
slow	245	218
fast	292	346
Total:	537	564
Low		
slow	176	325
fast	227	312
Total:	403	637

Separate χ^2 analyses of these subsets showed that significant differences in correct identifications of major and minor were found when register and tempo were paired ($\chi^2 = 125.71$, [5], $p < .001$). Interestingly, major-high range examples received the highest number of correct responses, followed by minor-low range combination; major-low and minor-high received the lowest scores.

Visual comparisons of the total correct responses for each mode, separated by register and tempo, may be seen in Figures 1 and 2.

FIGURE 1

Correct Identification of Major/Minor Mode According to Tempo

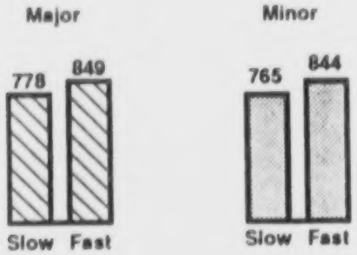
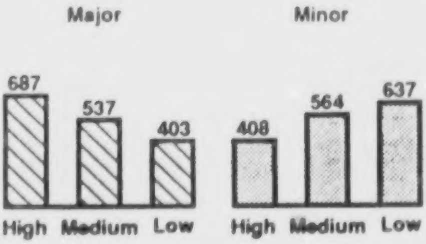


FIGURE 2

Correct Identification of Major/Minor Mode According to Register



It would seem, from these analyses, that when tempo is combined with mode it has little effect on children's ability to identify correctly the two modes. However, when register is paired with mode, however, appears to influence children's perception of that mode.

Discussion

Both of these studies were undertaken with the intent of determining how elementary children hear major and minor chord sounds and how instruction in mode (chord) identification might be facilitated. Study 1 showed that age did not play a significant part in how accurately the students identified major and minor. Further results indicated that children can learn to identify major and minor chords without the help of additional, non-musical terms. Possibly the addition of non-musical visual and verbal cues may confuse children when cues are used as a "crutch" to identify an element of music. It is entirely possible that children might enjoy using non-musical descriptors to express emotions and feeling, but this may not be an accurate or efficient method of teaching major and minor chord sounds.

Since students in Study 1 did not score exceptionally high in either of experimental condition, a strong possibility exists that a different variable might be found to facilitate accurate identification of major and minor modes. Perhaps repeating the task over larger time periods or using variable schedules of instruction might be more effective than the brief period of instruction as was utilized in these two experiments. A second possibility is that children received limited information from the triad/chord stimulus, and would have performed better had they heard longer examples of music. In the experience of the two researchers, children often attend to other, more obvious aspects of music such as tempo and timbre when listening to longer segments of music. For this reason it was decided to isolate the modes and present them in smaller chord-triad examples.

The results of Study 2 warrant closer investigation. Elements of music are often discussed and taught without combining them with other elements. If, as the results of this study indicate, mode may be confused with register (if a song is high, it might be identified as major, for example), then perhaps educators and researchers might determine a sequence of element combination and identification becoming progressively more difficult as the children mature.

It was interesting to note that subjects' age was not a factor of importance in either study. One might expect a difference to exist between third and fifth grade due to maturation (Petzold, 1965), but this was not the case in the present investigations. It is speculated that since identification of major and minor modes appears to be independent of maturation in the upper elementary years, this could be an advantageous time to teach this concept.

The results of these two studies suggest that caution should be used by educators when presenting modes to children; responses may be indicating the ability to discriminate something other than major/minor sounds. Further research in mode identification and efficient means of instruction at the elementary level would seem to be valuable.

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CHORAL DIRECTORS' PERCEPTION OF CHORAL ERRORS

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The purpose in choral and instrumental rehearsals is to gradually eliminate imperfections in musical performance. In order to facilitate progress toward performance standards, conductors must listen to the ensemble to evaluate the level at which learning must begin. As the conductor modifies the sound of the ensemble, it is expected that the performance will eventually resemble the conductor's impression of the music. Successful analyses can be made by the ensemble director when he is able to hear musical aspects of the performance. He then formulates a plan based on what he has heard, and by following some type of hierarchical design, he systematically changes the sound until it becomes a facsimile of his aural impressions.

What do directors hear in musical performances? If they can hear errors, can they locate them in the score so that proper rehearsal procedures can be established? Are directors able to recall the things to be corrected after the performance so that they may rehearse incorrect passages? What is the hierarchy addressed by ensemble directors to indicate the most consequential musical flaws to be corrected? These and other questions regarding conductors' perceptions and decision making abilities are consequential to the issues they choose to address in rehearsals.

College choral methods classes expose some students' lack of ability to hear errors in performance. If students hear errors, they frequently cannot identify the voice part where the error occurred, and often waste time in rehearsing the other voice parts. Such occurrences have prompted investigations in aural error detection that support the idea that improvement can be realized through practice. Researchers have attempted to identify relationships between skills in error detection, musical abilities and experiences (Brand, 1981), and music theory components (Gonzo, 1971; Gregory, 1972; Larson, 1977). Although musical abilities and experiences seemed not to affect error detection skills, aural discrimination tasks such as sightsinging and dictation seemed to be somewhat related to these abilities. However, Larson (1977) suggested that the relationship was not strong enough to warrant the exclusion of specific instruction in error detection, and Brand (1981) supported this idea by suggesting that instruction in error detection seemed to be necessary for one to be competent in the skill.

Improvement in error detection seems to be a result of time and practice. Both programmed instruction (Ramsey, 1979; Deal, 1985) and active participation in musical experiences (Gonzo, 1971; Stuart, 1979; DeCarbo, 1982; Stwolinski, Faulconer, & Schwarzkopf, 1988) have contributed to improving abilities in this area. Gonzo's (1971) research indicated that teachers with six to ten years of experience in the classroom and those with master's degrees were able to hear errors more proficiently than undergraduate music majors. In Ramsey's (1979) study, subjects who spent more time in error detection training by participating in a longer version of programmed instruction were more proficient in the skill of error detection than those who received a shorter version. In addition to programmed instruction and in-class teaching experiences, a variety of instructional techniques have been used to improve error detection and musical discrimination in performance techniques (Stuart, 1979). DeCarbo (1982) discovered that a podium-based format was effective in improving error detection abilities in an atmosphere that closely resembled the rehearsal environment.

In order to become proficient in detecting errors, students must learn to listen effectively to musical elements as they occur. Research by Stwolinski et al. (1988) indicated that subjects were able to identify aural errors more proficiently if they evaluated performances after having listened for errors. Aural abilities seemed to improve as subjects used this same mode of practice in task preparation. More specifically related to musical elements, Byo (1991) found that when varying timbres were programmed into homophonic and polyphonic performances of electronically reproduced compositions, subjects were able to hear rhythm errors more accurately than pitch errors. In addition, he indicated that rhythmic movement or other compositional functions might ultimately affect a listener's ability to locate errors of pitch and rhythm.

Choral and instrumental conductors use their aural abilities to evaluate performances of students with varying skills and abilities. The pacing of the rehearsal may be dependent upon a conductor's perception of errors, the personal strategy implemented in correcting errors, and the time element between the two. Although structured errors in research studies may be necessary for experimental clarity, conductors seldom hear such tidy presentations of errors. When directors listen to a performance including multiple errors, what do they hear? What do experienced conductors regard as most consequential when they hear errors in a performance? Are they able to recall these errors for correction as they conduct their rehearsals?

The purpose of this study was to examine responses of experienced choral directors in identifying errors in a choral performance. One variable for examination was the effect that following a musical score might have on the perception, identification, and recall of choral problems as opposed to listening to performances without a musical score provided. Of secondary importance was an examination of a hierarchy of consequential choral problems implied by the order in which problems were listed.

Procedure

Choral directors (*N*=33) in public school, college, or church choir positions volunteered to be subjects for this study. Several subjects (*n*=18) were drawn from registrants at a state choral directors' convention in Texas, and were tested in one of the assigned meeting rooms. At the convention, the number of subjects varied per testing, depending on individuals' attendance at scheduled meetings in the convention program. The remaining subjects (*n*=15) were tested individually in their respective school and church offices and in my university office. With the exception of the convention meeting room containing only one table and several chairs, all testing areas were familiar to subjects, and were thought to be devoid of distractions.

Specific areas and levels of experience included elementary, middle school/junior high, high school, college, and church. Overall, there was an average of 12.97 years of experience among the total number of subjects, and the average number of years experience at each level for subjects was as follows: (a) elementary (*M* = 5.58), (b) middle school/junior high (*M* = 4.94), (c) high school (*M* = 8.47), (d) college (*M* = 5.29), and (e) church (*M* = 11.13).

The stimulus audiotape developed for this study consisted of eight 30-second excerpts of four different compositions being rehearsed by 150 high school singers in a music camp setting (two excerpts from each composition). The researcher recorded four two-hour rehearsals of the group, and selected eight 30-second excerpts that included tutti performances of voice parts without rehearsal instructions. These were recorded on a cassette tape with 15-seconds of silence between each example and included excerpts from each of the following: (a) *Gloria* by John Rutter, (b) *A Red, Red Rose* by James Mulholland, (c) *Hosanna* by Rene Clausen, and (d) *Hold On* arranged by Eugene Thamon Simpson. The two excerpts from each composition were paired on the final stimulus tape, and were presented to subjects on a high quality Panasonic RX-D T680 portable stereo. This equipment was considered appropriate since the study examined general perceptions of choral errors as opposed to the identification of predetermined errors structured within performances.

Subjects were randomly divided into two groups. Group 1 ($n = 17$) followed a musical score as they listened to the examples, and Group 2 ($n = 16$) relied only on aural discrimination. A t test analysis revealed that there were no significant differences between groups as related to the number of years they had spent as choral directors at various levels of instruction.

Before playing the stimulus tape, the researcher briefly described the task as a choral conducting project, and gave specific instructions to both groups of subjects. Written instructions were provided, and subjects were instructed to follow along as the researcher read aloud. Group 1 was provided a score for each example, and instructed to follow the score as they listened. They were to listen for aspects of the performance that they would correct if they were the director of the ensemble. It was suggested that the problems might be related to pitch, rhythm, phrasing, intonation, balance, dynamics, tone quality, style, blend, diction, or other musical components. Subjects were instructed to wait until the end of the example, when they would have one minute to list at least five things they would correct in a rehearsal of the group they were hearing. Subjects were instructed that they were not to refer to the score while writing. An answer sheet with four sample responses consisting of various combinations of possible musical problems that might be heard in the examples was provided. Although subjects were instructed to list at least five problems heard in performance, the answer sheet was expanded to accommodate ten responses from subjects to maximize participation in the task. For each problem they identified, subjects were to circle the appropriate voice part(s) in which the problem occurred, and describe briefly the nature of the problem. Subjects were instructed to list the problems in the order in which they would address them in the rehearsal, and make their comments as specific and precise as possible. Subjects were then given opportunities to ask questions to clarify the task. Red brackets marked the specific portion of the score that corresponded with the excerpts they heard. They were also told to place the answer sheet on top of the score when they were writing to limit the possibility of referring to the score. Group 2 received similar instructions, but was not provided a score, and relied entirely on aural skills for error detection.

At the end of the session, subjects were asked to respond to a questionnaire that requested information regarding: (a) the levels in which the subject had served as a choral director; elementary, junior high/middle school, high school, college, and church, (b) the number of years' experience in the various levels; and (c) a list of the examples recognized from the tape.

Results

In order to establish comparisons between subjects who followed a score (Group 1) and those who relied only on aural perception for detection of errors (Group 2) in choral performances, a χ^2 test for independent samples was utilized as the primary statistical test for the study.

As subjects listened to examples, they indicated the location of the musical errors they were hearing according to voice part and provided a description of each error. For each written comment, the researcher categorized the information as an element of one of the following musical components: (a) intonation, (b) correct/incorrect notes, (c) rhythm accuracy, (d) tone quality, (e) diction, (f) dynamics, (g) balance, (h) blend, (i) phrasing, and (j) style.

Although some of the components for examination might lend themselves to interpretations resulting in the overlapping of categories, selection of category listings was determined by selecting vocabulary words that are sometimes used to describe musical performance. In order to accommodate comments written by subjects that were not specific enough to be assigned to one of the predetermined categories or were unrelated to the task, a "general" category was established. Comments of subjects in Group 1 and Group 2 were examined collectively per example, and each was coded according to a categorical component to which it referred. In addition to the comment of the error, the data indicated the voice part committing the error and rank indicating the order that subjects would address each problem in rehearsal. For each example, the distribution of voice parts was examined according to : (a) women's voices, (b) men's voices, (c) a combination of men's and women's voices, (d) and all voices (SATB or the entire ensemble). Because most subjects were able to list approximately four comments per example, perceived errors were compiled collectively regardless of categorical reference for any written statements >4.

A χ^2 test for independent samples indicated that subjects in Group 1 ($n = 17$) detected errors differently from Group 2 ($n = 16$) in Example 6 ,χ^2 (10, $N = 106$) = 20.29, $p < .05$, and Example 8, χ^2 (10, $N = 124$) = 21.1, $p < .05$. Subjects in Group 1 perceived more problems related to dynamics and ensemble balance than those who were depending only on aural skills for evaluation. Subjects in Group 2 addressed more intonation problems and more problems related to blend than those who followed a score as they listened. Results of comparisons between groups in Example 8 indicated that subjects who were not provided a score perceived more intonation and tone quality errors than those who followed a score. However, subjects who were provided a score indicated more errors concerning musical style and diction than those in Group 2. In Examples 6 and 8, both groups' responses to rhythm accuracy were absolutely equal in each example (Ex. 6, 5 errors per group; Ex. 8, 10 errors per group). In the remaining six examples, the responses of the two groups were similar. However, there was a significant distribution between groups in the total number of comments written over the eight examples, adjusted χ^2 (1, $N = 947$) = 5.94 $p < .05$; subjects in Group 1 (followed score) wrote more comments than those in Group 2 (no score).

Table 1 shows an overall frequency of written comments and shows the number of errors cited in each position of priority. For example, subjects in

Group 1 listed intonation as their first comment 30 times, (i.e., the choral error they would address first if they were conducting the performing ensemble). Subjects indicated errors of rhythm, intonation, and balance more often than other musical components. In general, the groups responded quite similarly, although some differences appear between groups in the General and Correct Notes categories.

Table 1

Frequency of Comments Directed Toward Categories by Rank Order and by Group Across All Music Examples

Rank Order of Comment	1	2	3	4	>4	Total
Response Category Group 1 (with score; *n*=17)						
Intonation	30	22	13	9	8	82
Correct Notes	6	4	4	1	9	24
Rhythm	34	27	20	21	9	111
Tone Quality	7	15	6	3	12	43
Diction	8	15	17	13	6	59
Dynamics	9	7	14	3	6	39
Balance	31	18	14	13	6	82
Blend	1	3	6	0	1	11
Phrasing	1	4	5	9	3	22
Style	5	9	10	4	9	37
General	5	7	5	1	5	23
TOTAL						533
Response Catagory Group 2 (without score; *n*-16)						
Intonation	35	24	17	9	10	95
Correct Notes	5	1	1	0	0	7
Rhythm	38	34	22	15	5	114
Tone Quality	13	10	20	7	6	56
Diction	10	10	10	10	2	42
Dynamics	2	4	6	2	3	7
Balance	17	20	12	10	5	64
Blend	1	5	4	1	2	13
Phrasing	4	4	1	4	1	14
Style	1	5	3	4	3	16
General	2	3	1	1	1	8
TOTAL						436

Subjects were instructed to identify voice parts where errors occurred. A total of 979 responses to errors in voice parts were recorded by subjects; almost half (462) of the responses were references to the entire ensemble (SATB); 250 comments referred to men's voices, and 198 comments referred to women's voices; relatively few (69) comments described problems referring to unusual combinations of mens' and womens' voices (i.e., SAT, SAB, ATB, SB, AB, AT, ST, etc.).

Discussion

Results of this study indicate that, although the visual aid of the musical score seemed to affect subjects' aural discrimination of choral errors in a limited number of examples, choral directors who did not follow a score during an aural example seemed to hear the same errors as those who were provided the visual assistance. The only significant differences in responses were evident in Examples 6 and 8. Example 6 was rather slow and sustained, and subjects seemed to differentially identify errors that concerned balance and intonation. Subjects who did not use a score identified errors of intonation more than those with a score. Subjects with a score probably heard more errors in dynamics because they were looking at the score markings, whereas Group 2 was probably unaware of the marked dynamics for this unfamiliar piece. Errors in balance were noted more by subjects who were following a score. Again, it would seem that looking at a score might clarify the function of each voice part more effectively in the composition than an aural stimulus alone, thus affecting the perception of errors. Lack of familiarity with the piece might have affected perceptions of errors in balance for subjects in Group 2 because the absence of musical notation prompted minimal expectations from subjects not following a score.

Example 8 was a somewhat familiar, rhythmic spiritual in which correct execution of stylistic elements was essential. Those subjects who followed a score identified more errors in elements of style than those in Group 2. Visual cues such as syncopated passages within the score notated with accents and specific stylistic indicators might have contributed to subjects' stylistic expectations. Group 2 identified a greater number of errors related to intonation than Group 1. Subjects who were concentrating more on listening might have heard errors in pitch that they considered more consequential than stylistic factors that might have been conveyed through a printed score. Group 2 mentioned tone quality as an error more than did Group 1. Again, primary attention to aural errors heightened by the absence of the visual cue might have allowed heightened discrimination of pitch problems so that subjects concentrated intensely on choral components more closely associated with aural factors as they relate to vocal production. Group 1 probably identified more problems in diction than Group 2 because they were looking at the words on the score. It might be that without visual reminders, professional choral directors actually forget to concentrate on some aspects of musical performance.

Future research in the area of choral error detection might examine the variable of one's concentration on a particular set of voices in rehearsal to determine tendencies to unwittingly allow errors to occur in rehearsal within voice parts when their attention is focused elsewhere. In addition, comparisons of the responses of these choral directors actively involved in teaching choral music with those of choral students in higher education who have not yet encountered the professional setting might indicate discriminations of musical components that are obtained primarily through experience alone. This information might contribute to musical growth for students in college choral methods classes by determining a course content that would focus upon developing skills in error detection that are evident in professional choral directors, but are not yet developed in choral music education students.

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MODULATED INTENSITY DISCRIMINATION AMONG MUSICIANS AND NONMUSICIANS

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Intensity, loudness and dynamics are terms often used to describe an integral part of music acoustics, perception, and performance, respectively. Music educators regularly teach students to discriminate and perform different levels and changes in intensity. Perceiving intensity differences in music is said to begin at an early age (Bentley, 1976; Petzold, 1966).

While there is a paucity of research focused on responsiveness to intensity modulations, a clear lineage of studies has isolated specific and rather consistent findings about responses of musicians and nonmusicians to modulations of frequency and tempo. Research with frequency perception and performance has found that there is greater acuity in perceiving flatness and consequently an unwitting tendency to perform sharp (Geringer, 1978; Geringer & Madsen, 1987; Geringer & Sogin, 1988; Geringer & Witt, 1985; Madsen, 1974; Madsen, Edmonson, & Madsen, 1969; Papich & Rainbow, 1974; Salzberg, 1980).

Investigations of tempo discrimination and performance have shown that decreases in tempo are perceived more accurately than tempo increases. (Drake, 1968; Killian, 1985; Kuhn, 1974; Kuhn, 1977; Kuhn & Gates, 1975; Madsen, 1979). Consequently, performers often unknowingly rush tempi. This in turn contributes to performance errors.

Preference studies in frequency and tempo have indicated some interesting results. Musicians and nonmusicians exhibit a consistent preference for increased sharpness and fastness (Geringer, 1976; LeBlanc, 1981; Wapnick, 1980). Other studies have shown that certain variables within musical excerpts, such as melodic complexity, beat prolation, and familiarity can influence perceptions and preferences (Duke, 1987; Duke, Geringer, & Madsen, 1988; Geringer & Madsen, 1987; Kuhn, 1987; Kuhn & Booth, 1988; Wang & Salzberg, 1984; Yarbrough, 1987).

Only one study in intensity modulation is analogous to those in frequency and tempo. Geringer (1991) investigated listener discrimination of constancy or gradual increases and decreases in intensity of synthesizer music, previously recorded music excerpts, and electronic tones. Stimuli that changed intensity were modulated at the rate of 1 dB per second across 12 seconds. Musicians did not differ from nonmusicians in frequency nor latency of correct responses, and subjects correctly discriminated intensity modulation decreases sooner than intensity increases.

Few performance and preference studies have measured changes in intensity; Geringer (1980) reported that student musicians who attend to precise dynamic markings are able to perform without losing pitch and rhythm accuracy. Geringer and Breen (1975) investigated the role of intensity in musical expression and found that intensity changes are judged more important and expressive in classical music than in rock and roll. Geringer (1992) noted significantly greater changes in crescrendos than descresendos in commercially recorded choral, orchestral and piano performances.

The present study measured intensity discrimination using methods similar to those Kuhn (1974) and Madsen (1979) employed when investigating discrimination of modulated beat tempos. However, this research was designed to test how accurately and quickly musicians and nonmusicians respond to increases, decreases, and constancy of intensity in recorded long tones.

Method

Sixty-two randomly selected subjects participated in this study; 31 were musicians and 31 nonmusicians. Musicians were music majors enrolled in a degree program at a state university. Nonmusicians were enrolled in the same university as elementary education majors, were not participating in a music organization, and had less than three years of private or group music study during their public school experience. Demographic group comparisons were made on sex and age differences. Age differences, that varied from 20 to 43 were not significant; however, there were significantly more women than men in the nonmusician group.

Independent variables included three dynamic levels of 60, 70 and 80 decibels. Each dynamic level was electronically controlled with a Moog synthesizer to crescendo, decrescendo or maintain constant intensity. The amount of intensity change was 3 dBs across the last 10 seconds of the 16-second trials. The 3 dB modulation was selected (a) after consultation with a university audiologist who confirmed the 3 dB increment as a normally acceptable modulation included in auditory examinations, and (b) subsequent to a pilot test which utilized a 10 dB modulation that appeared to be too easily discriminated by subjects.

The stimulus frequency, F#4 (369.9 Hz), was selected as a middle-range frequency easily perceptible to subjects. Stimuli consisted of tape recordings of professional musicians performing on clarinet and synthesizer. The clarinet long tone was recorded initially without any change in volume. For the 3 dB increase and decrease in intensity, the tape recorded clarinet tone was played through a sequencer on the Moog synthesizer. The sine wave generated by the Moog was fed through the same sequencer process as the clarinet tone for modulations.

The stimulus tape contained 6 trial items followed by 18 test items. Listening examples were randomized to avoid an order effect in timbre, dB level or modulation change. There was an equal number of items for increase, decrease, and same intensity at 60, 70, and 80 dBs for clarinet and sine wave tones. The three dB levels were chosen as they approximate mp, mf and f dynamic levels.

Subjects were tested individually in a small room for approximately 12 minutes each. Equipment used in this experiment included a Sony TC-360 stereo tape recorder; Scotch 206 recording tape; a Hunter model 320S sound activated switch; electronic digital stop clock; toggle switch; and Model PRO 4AA Koss stereo headphones.

When subjects entered the experimental room, they were greeted by with the following instructions:

> This is an experiment in the changes of loudness in musical tones. Some tones you will hear will increase in loudness, some will decrease in loudness and others remain at the same loudness. As soon as you detect any difference in volume after the tone has started, throw the switch to the off position and circle your answer. If you hear no change, do not change the switch but do circle your answer. Let's begin with illustration A if you have no questions. . . . Ready, illustration A.

Stimulus tones activated the electronic stop clock and simultaneously were heard by the subject. When subjects threw the toggle switch off, stimulus tones and stop clock ceased. The experimenter reset the toggle switch for the next listening example, recorded the time, and reset the stop clock. Subjects circled Increase, Decrease or Same for each of the 6 illustrations and 18 test items. Subjects did not receive confirmation concerning correctness of their responses. Timed responses could vary from 0 to 16 seconds, and correct time responses for decreased and increased intensity modulations could be from 6 to 16 seconds.

Results

This investigation was designed to test intensity discriminations on the basis of two dependent measures: (a) correct recognition of modulations in long tones that increase, decrease or remain the same intensity and (b) speed with which recognition of intensity modulation is made. Correct scores from subjects' responses were tabulated and compared. Table 1 shows that there is no significant difference between total correct responses of musicians and nonmusicians. In fact, it is surprising that nonmusicians made slightly more correct responses than musicians. However among musicians, there were significantly more correct responses to decreased rather than increased intensity items ($\chi^2 = 5.49$, $df = 1$, $p < .02$). Nonmusicians also showed a similar tendency of stronger acuity for decrescendo than crescendo.

Table 1

Total Correct Responses for Intensity Conditions*

Modulation Condition:	Same	Decrease	Increase	Totals
Musicians	86	$\underline{124}$	$\underline{77}$	287
Nonmusicians	107	113	78	298

*Underlined scores are significantly different at $p < .02$; all other scores are not significantly different.

The three decibel levels and two timbre variables produced no significant differences between groups (see Table 2). Subjects in both groups showed nearly the same accuracy across the three dB levels ($t = 3.05$, $df = 2$, $p = .09$) and two timbre conditions ($t < 1$, $df = 1$, $p = .67$). However, when comparisons were made on dB level x modulation cross tabulations with data from Tables 1 and 2, both groups perceived 60 dB decreases significantly better than 60 dB increases ($\chi^2 = 100.1$, $df = 1$, $p < .001$). No other comparisons differed significantly.

Table 2

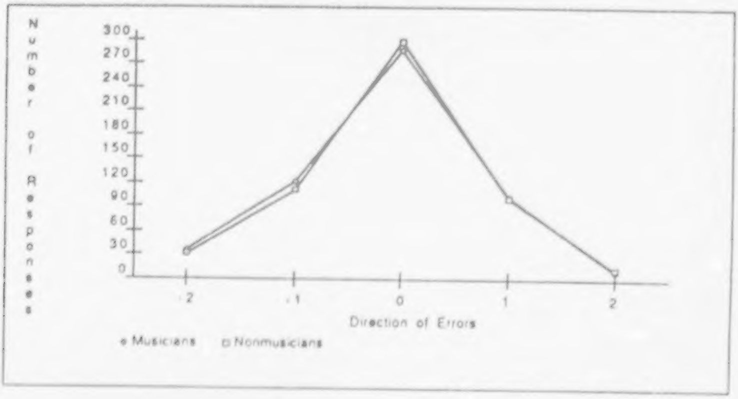
Total Correct Responses for Three dB Levels and Two Timbres*

	dB Levels			Timbres	
	60dB	70dB	80dB	Clarinet	Sine Wave
Musicians	89	100	98	138	149
Nonmusicians	95	102	101	153	145

*No significant differences among scores.

Data for increase, same and decrease categories were analyzed for direction of error as well as correct response. Subjects' actual responses were compared to the correct answer as an indication of the direction of error (that is, -1 = subject answers "decrease" for same item or "same" for increase item; -2 = subject answers "decrease "for increase item; +1 = subject answers "same" for decrease item or "increase" for same item; +2 = subject answers "increase" for decrease item; and 0 = correct response). Analysis of subjects' direction of errors confirms that throughout the study subjects tended to perceive crescendos as constant intensity. Graph 1 data indicate that the five categories of error responses between musicians and nonmusicians do not differ significantly ($\chi^2 = 1.71$, *df* = 4, $p > .20$). However, both groups differ significantly in the number of errors across the five categories ($\chi^2 r = 54.6$, *df* = 4, $p < .001$) as analyzed using the Friedman Two-Way Analysis of Variance statistic (Madsen & Moore, 1978). Frequency of errors reported in Graph 1 shows a central tendency similar to a normal

Graph 1. Direction of Error in Total Responses of Musicians and Nonmusicians to Intensity Modulations



curve. While most responses are correct and shown in the center at 0 errors, distribution of errors tapers off rather evenly on + and - directions. Mistakes in judging intensity changes showed a balance of over and under estimating.

The second main aspect of this study concerned subjects' speed of correct responses that were divided into five categories in which categories 1 and 2 included no changes, while categories 3, 4, and 5 included 1, 2, and 3 dB modulations respectively. Table 3 shows that musicians overall reacted more quickly than nonmusicians. Of the 558 responses by each group, no subject responded within the first time category of 0-3.4 seconds. Responses in the second time category of 3.4-6.8 seconds were guesses (errors) since modulations of intensity did not begin until the seventh second. In the third time category when 1 dB would have occurred, subjects began to correctly perceive changes. In the fourth time category with 2 dBs of modulation, more subjects noted changes. Non-response decisions by subjects were included in the maximum time category of over 13.6 seconds where most responses occurred.

Table 3

Five Categories of Response Time by Musicians and Nonmusicians to Perceived Changes in Intensity*

Categories (in seconds)	1 0-3.4	2 3.4-6.8	3 6.8-10.2	4 10.2-13.6	5 13.6-17
Musicians	0	48	119	114	277
Nonmusicians	0	35	87	113	323

*Significant difference between groups ($\chi^2 = 10.73$, $df = 3$, $p < .02$).

Subjects' mean response times for increases and decreases in intensity were not significantly different between groups ($f < 1$, $df = 1$, $p > .05$). Comparing mean response time for increases, musicians averaged 11.13 seconds and nonmusicians 12.24 seconds. For decrease items, musicians averaged 11.09 seconds to nonmusicians 11.96 seconds. The similarities of these response times also indicate no significant differences in how quickly musicians and nonmusicians detected crescendos and decrescendos; however, subjects were slightly faster in perceiving decrescendos.

Item analysis of subjects' responses on the testing instrument indicates that significantly more correct responses were made on the last half than the first half ($\chi^2 = 4.6$, $p < .05$). Musicians had 124 correct responses on the first half and 163 correct answers on the last half. Nonmusicians also improved with practice from 139 first half responses compared to 159 at the end. Since all subjects improved from first to last halves of the perception test, it is assumed that learning took place. Future testing should include more practice examples before assessing perceptual responses to intensity modulations.

Discussion

Main findings of this study indicate that (1) there is no difference in correct responses between musicians and nonmusicians when perceiving intensity modulations,(2) musicians discriminate decrescendo significantly better than crescendo and nonmusicians tend to respond similarly, (3) musicians respond slightly more quickly than nonmusicians in detecting intensity changes, and (4) both groups tend to perceive equally well the three dB levels and two timbres employed here.

Findings of this study replicate the results of Geringer (1991) in that musicians and nonmusicians did not differ in accuracy and speed of perceiving changes in intensity, and decrescendo tended to be discriminated more quickly than crescendo. Results about intensity discrimination in the current study also follow the trend of related studies in pitch and tempo perception. Just as subjects tend to respond with greater acuity to flatness and deceleration, so do they appear to perceive decreases in intensity more accurately than increases.

While these similarities may follow with startling consistency, more evidence is warranted, particularly in intensity discrimination, before definite conclusions are drawn. Replication of this study would be enhanced by (a) increasing the number and age groups of subjects, (b) using an equal number of males and females, (c) varying the rates and levels of intensity modulation, (d) using different pitches and timbres with more complex tones, and (e) counterbalancing the order of stimulus examples. With larger samples and different age groups, it will be interesting to see if the present findings are reconfirmed. Further research is required to demonstrate the influence of the rate of intensity change on the speed of intensity perception. Results of this study showed no difference in perceiving sine waves and long tones from the middle register of the clarinet. Most sounds that we listen to are not sine waves but rather more complex tones; studying how harmonics influence how we hear alterations in loudness would have direct bearing on expressive performance practice. Subsequent investigation into performance of intensity modulations is also needed.

Implications for music educators suggest that careful attention be given to teaching dynamics, especially crescendo which is not perceived as accurately as diminuendo. One of the first discriminations that children make about music is how loud or soft it is (Bentley, 1976). Music teachers might assume that loudness is so easily and quickly perceived that it does not need to be taught. Teachers spend so much time on other aspects of performance, such as rhythm, pitch, and tone production that control of sound intensity may not be taught sufficiently. Teachers may be so engrossed in the technical side of music making that not enough time is spent on expressive elements. Shading or brightening dynamic levels is generally attributed to expressive musicianship. The lack of difference in how musicians and nonmusicians perceive intensity changes can be reassuring for music educators. Dynamic changes that are sought in rehearsals can at least be heard and appreciated by audience members with little musical training as well as trained musicians.

The intent of this investigation was to isolate how musicians and nonmusicians perceive changes in intensity so that music educators would have objective evidence upon which to base their teaching practice. Whether practioners can change intensity discrimination responses by applying these findings remains to be seen.

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THE HISTORY OF CLASSROOM INSTRUMENTS IN THE SILVER BURDETT MUSIC SERIES, 1885-1988

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Music instruction in the public schools is no longer confined to developing the singing voice. Numerous changes have occured in the music classroom since music became part of the elementary school curriculum. The introduction of classroom instruments into the curriculum in the early 1990s was one change that significantly enhanced music instruction.

Including instruments in the general music classroom was originally intended to develop an nterest in instrumental music (McConathy, Miessner, Birge, & Bray, 1931). The use of instruments has since been recognized for developing additional musical values, skills, and concepts.

Snyder (1954) believed that playing instruments gives all the children in a classroom the opportunity to participate in music activities. The instrument playing also motivates students "to learn more about musical notation in order to read what they are playing on an instrument" (p.14).

Ellison (1959) compared instrumental playing to experimenting with sounds. Children may stretch a rubber band over a box and strum it, tap a pencil on a table, or clap two spoons together. The children are experimenting with sound and making music in a way that makes sense to them. This experimentation with non- conventional sound sources is similar to experimenting with actual instruments.

Classroom instruments can also help develop rhythm and stimulate an interest in instrumental music (Thompson & Nordholm, 1949). Coordination of large and small muscles is another benefit of playing instruments (Elliott, 1966). Mursell (1956) stated that playing a simple instrument gives a child a sense of achievement and promotes respect for their own property and the property of others.

It is clear that classroom instruments have taken an important role in general music instruction. In order to explore their use from a historical perspective, the purpose of this study was to examine the introduction and use of classroom instruments in the Silver Burdett music series, 1885-1988. The Silver Burdett series was chosen because Silver Burdett is the oldest music publisher that is still in exsistence (Fisher, 1933). They continue to be a leading music textbook publisher and have published a total of ten music series. These series, with their authors/editors, are listed below:

1. *Normal Music Course*--1885
   Hosea E. Holt and John W. Tufts
2. *Modern Music Series*--1901
   Robert Foresman and Eleanor Smith
3. *Progressive Music Series*–1914
   Horatio Parker, Osbourne McConathy, Edward Bailey Birge, W. Otto Miessner
4. *The Music Hour*--1929
   Osbourne McConathy, W. Otto Miessner, Edward Bailey Birge, Mable E. Bray

5. *New Music Horizons*--1944
Osbourne McConathy, Russell V. Morgan, James L. Mursell, Marshall Bartholomew, Mable E. Bray, W. Otto Miessner, Edward Bailey Birge
6. *Music for Living*--1956
James L. Mursell, Gladys Tipton, Beatrice Landeck, Harriet Nordholm, Roy E. Freeburg, Jack M. Watson
7. *Making Music Your Own*--1964
Beatrice Landeck, Elizabeth Crook, and Harold C. Youngberg
8. *Silver Burdett Music*--1974
Elizabeth Crook, Bennett Reimer, and Davis S. Walker
9. *Silver Burdett Music Centennial Edition*--1985
Elizabeth Crook, Bennett Reimer, and Davis S. Walker
10. *Silver Burdett World of Music*--1988
Jane Beethoven, Carrell Bledsoe, Carment E. Culp, Jennifer Davidson, Lawrence Eisman, Mary E. Hoffman, Catherine Nadon-Gabrion, Mary Palmer, Carmino Ravosa, Mary Louise Reilly, Carol Rogel Scott, Phyliss Weikart

In an effort to determine historical trends, 25 elementary music series published in the United States from 1926-1976 were examined by Diaz (1980). The books examined were grades one through six. The result of the study revealed that the series' goals mights be divided into six periods. These periods will be described below and compared to instrument use as reflected in the goals of the Silver Burdett music series.

As identified by Diaz (1980), the music series' goals during 1926-1935 were to make the child's life happier and more satisfying. The goals of the second period (1936-1943) were developing music reading skills through singing. During the years 1944-1954, the third period, the music series' goals were to develop music reading skills through rhythm activities and singing. The fourth period (1953-1962) saw a five-fold approach to music education, including listening, creating, moving, playing instruments, and singing, with less emphasis on music reading. The fifth period (1963-1969) expanded upon the five-fold approach to include not only music reading, but musical knowledge, concept formation, positive attitudes, and music appreciation. The sixth period (1970-1976) emphasized developing the aesthetic response through musical skills.

The analysis of these goals reveals that increasingly less emphasis was placed on singing. Other musical activities began to enter the elementary music classroom. One of theses activities was the playing of classroom instruments.

A comparison of Diaz's analysis of elementary music series' goals and the goals of the Silver Burdett music series discloses some agreement. *The Music Hour* (1929) was the first Silver Burdett music series to introduce classroom instruments. The playing of instruments was seen as an approach to music appreciation and understanding. It was also a way to develop an interest in instrumental music.

The Music Hour is consistent with the goal of the elementary music series for the first period (1926-1935) which was to make the child's life happier and more satisfying. *The Music Hour* also is partially consistent with the second period goal (1936-1943), which was to develop reading skills through singing. The emphasis in *The Music Hour* was no longer solely on developing the singing voice, but also on developing more literacy through singing.

New Music Horizons (1944) introduces the five-fold program of music activities: singing, playing, rhythmic response, listening, and creating. Singing was no longer the only music experience. *New Music Horizons* introduced the concept of the five-fold approach to music education in 1944, although Diaz identifies this as the primary characteristic of the fourth goal period (1953-1962).

Diaz also suggests less emphasis on music reading during the fourth period. *Music for Living*, published during this time frame, lists nine uses of classroom instruments. One of these uses is an approach to music reading. While instruments have uses other than for music reading, such as group participation, outlining a melody, highlighting details (rhythm and meter), adding a coda or introduction, developing harmonic feeling, carrying a part-song or round, emphasizing tone quality and creating sound effects, and pointing up the mood of the music, it is not clear whether there is less emphasis on reading or merely a different type of emphasis.

Making Music Your Own (1964) includes a very brief philosophy statement. The philosophy simply states that the series contains a variety of musical activities. The goal of the fifth period (1963-1969) was to expand the five-fold approach. The two are in agreement--variety of activities is consistent with expansion. The playing of instruments maintained its prominence as part of the five-fold program.

Silver Burdett Music (1974) took a new approach to music education. This series was designed to increase a student's sensitivity to music. The path to developing sensitivity was to accomplish certain behaviors including perceiving, reacting, producing, conceptualizing, analyzing, evaluating, and valuing. The goal Diaz identified for the sixth period (1970-1976) was to develop the aesthetic response through musical skills. There is a direct correlation between Diaz's idea and *Silver Burdett Music.*

The *Centennial Edition* (1985) and *World of Music* (1988) series were published after the time periods described by Diaz. The philosophy of *Silver Burdett Music Centennial Edition* states that the basis of the series is aesthetic education. Along with relating music to other arts, music reading is also emphasized. Music reading is a skill which requires considerable time to accomplish. A simple instrument can help a student read music and for this reason, "beginning in Book One, notation is also studied in conjunction with instruments available in the classroom" (Crook, Reimer, & Walker, 1981, p.vii). Classroom instruments are a necessary part of this music series.

The World of Music (1988) series has music involvement as its goal. Music involvement deals with the student's response to music by singing, moving, listening, playing instruments, or creating. Once again, classroom instruments are a major part of music education.

Another approach to documenting the increase in the playing of classroom instruments is analysis of the number of songs that used instruments in each series. This analysis was accomplished by categorizing the songs using instruments according to the concepts the instruments were used to teach. Some of the songs were not able to be categorized due to difficulty in determining the concept being taught. Generally, the guitar and autoharp were the instruments included in the category "chord," bells and recorder in the category "pitch," and percussion and ethnic instruments in the "tone quality" category. The use of the piano appears to shift as it was categorized under "pitch" in the earlier series and "tone quality" in the later. These tables are limited to those series where books from each grade level were available for examination and are strictly the writer's interpretation intended for use in this study only (see Table 1).

Table 1. Instrument Use by Category

New Music Horizons--1944

	Chords	Rhythm	Pitch	Tone Quality
Book One		42	5	
Book Two		19	3	7
Book Three		28	38	13
Book Four		45	97	27
Book Five	15	39	5	36
Book Six	4	1	3	35
Totals	19	174	151	118

Music for Living--1956

	Chords	Rhythm	Pitch	Tone Quality
Book One				
Book Two	10	56	35	11
Book Three	18	133	70	7
Book Four	17	90	69	22
Book Five	28	46	32	13
Book Six	15	70	39	19
Totals	88	395	245	72

Making Music Your Own--1964

	Chords	Rhythm	Pitch	Tone Quality
Kindergarten Book		19	6	
Book One		30	27	
Book Two		14	21	
Book Three	33	11	38	2
Book Four	20	15	31	7
Book Five	8	15	28	38
Book Six	15	19	9	36
Totals	76	123	160	83

Table 1. --Continued

Silver Burdett Music--1974

	Chords	Rhythm	Pitch	Tone Quality
Kindergarten Book	20	27	21	
Book One	23	51	60	
Book Two	17	69	59	
Book Three	53	40	58	
Book Four	47	58	51	14
Book Five	45	30	64	24
Book Six	24	18	50	12
Totals	229	293	373	50

Silver Burdett Music Centennial Edition--1985

	Chords	Rhythm	Pitch	Tone Quality
Kindergarten Book	18	40	44	
Book One	21	53	58	
Book Two	21	79	66	
Book Three	54	52	84	
Book Four	56	63	54	11
Book Five	50	32	67	24
Book Six	24	20	58	12
Totals	244	339	431	47

World of Music--1988

	Chords	Rhythm	Pitch	Tone Quality
Kindergarten Book		50	40	
Book One	2	61	50	
Book Two	7	55	45	
Book Three	32	19	30	
Book Four	49	34	36	
Book Five	64	21	41	
Book Six	7	9	15	2
Totals	161	249	257	2

The 1956 series contained more songs with instruments than the 1944 or the 1964 series according to this listing. The 1974 and 1985 series had a considerable increase in the number of songs using instruments. This increase may have been due to the philosophy of the series which states that the use of instruments helps the reading music notation. The 1988 series shows a decline in the use of classroom instruments from the previous series. This series' philosophy stressed music involvement which could have caused a diminishing emphasis on music reading skills and stronger emphasis on other aspects of music involvement. Less emphasis on music reading skills could explain the decline in the use of classroom instruments.

The rise in the number of songs where instruments were used in the last three series could also be due to philosophy statements stressing discriminating sounds and the reading of music notation.

Assuming that the Silver Burdett music series is representative of elementary music curriculum over the past seventy years, classroom instruments have emerged as a vital part of a child's music education. The use of instruments in the elementary music classroom provides valuable educational and social experiences leading to increased music growth and understanding.

This article is based on the author's master's thesis completed at Florida State University, Tallahassee, Florida, in 1987.

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THE EFFECT ON CORRELATIONS WITHIN AND AMONG ADJUDICATION PANELS SYSTEMATICALLY REMOVED FROM FESTIVAL PERFORMANCES: AN EXPLORATORY I NVESTIGATION

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It has long been adjudicators' belief that the procedure whereby an instrumental ensemble takes the stage and warms up predisposes festival judges toward a given rating or score. Kruth (1970) stated:

> Conductors must realize that before a note is played a judge will, or should, observe the following factors: how a group takes the stage, grooming, posture, dress, instrumentation, and the efficiency of the set-up crew. . . . It is important that adjudicators consistently evidence concern and react accordingly when a performing group does not present *eye appeal* as well as *ear appeal*. The above factors are relevant to the initial judgment of the group and the ratings they will receive. (p. 48)

Current writers, too, have pointed out that extramusical factors may affect adjudicators' evaluations of a soloist or ensemble (Boyle & Radocy, 1987; Ross, 1989; Fox, 1990).

Is there indeed a relationship between rated and/or scored observations of instrumental ensembles' preperformance procedures and rated and/or scored observations of these ensembles' performances? Information available to adjudicators prior to performance of the first selection usually consists of:

1. The name of the school.
2. The name of the organization (concert band, wind ensemble, etc.)
3. The school's classification, typically based on school enrollment figures.
4. Observation of ensembles' set-up procedure.
5. Observation of ensembles' warm-up procedure.

Would adjudicators' evaluations of preperformance factors correlate highly with the final rating or score? If so, which factors? If adjudication panels were asked to rate only one, or some systematic combination, of the above factors, at which point would adjudicators' ratings or scores begin to correlate highly with the live-performance adjudicators'? Owing to the administrative difficulty of securing a large number of qualified judges to attend a festival and adjudicate ensembles' live set-up and warm-up procedures, judges in this study evaluated these procedures via videotape. A recent study (Bergee, in press) has demonstrated that videotape is a serviceable medium for evaluating solo instrumental performance.

Therefore, this investigation explored the following questions:

1. How does the interjudge reliability among adjudicators evaluating live performances compare with the interjudge reliability of adjudicators evaluating videotaped performances?
2. What is the interjudge reliability of adjudication panels evaluating only selected preperformance factors?
3. What are the relationships among adjudication panels evaluating live performances and adjudication panels evaluating preperformance factors only?

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Method

The set-up procedures, warm-up procedures, and performances of seven bands at a concert band festival were videotaped. The festival utilized a common procedure: Three judges heard the performances and assigned categorical, numerical ratings on a scale of I+ to V-. The following criteria were given to judges prior to the festival:

I	Superior	A superior performance in all aspects
II	Excellent	An excellent performance with only minor problems
III	Good	A good or average performance having some minor and a few major inaccuracies
IV	Fair	A fair performance with serious, major problems
V	Poor	An unsatisfactory performance having such serious major problems as to render the performance unsatisfactory in most aspects

Additionally, adjudicators awarded points under six captions (total = 100) and wrote anecdotal comments. The captions and their respective values were as follows:

General Musicianship and Interpretation/ Musical Effect (25 points): Tempo, Dynamics, Style, Phrasing, Uniformity Within Sections and Total Ensemble / Artistry and Fluency
Ensemble (20 points): Precision, Rhythmic Accuracy, and Articulation
Balance (20 points): Ensemble, Solo and Tutti Ensemble, All Sections of the Ensemble
Intonation (15 points): Pitch Comparison Between Individuals and Total Group
Tone Quality (15 Points): Comparison Between Individuals and Group Including Percussion
Quality and Suitability of Literature for the Ensemble (5 points)

Soon after the festival performances, a company of 15 adjudicators was assembled and randomly assigned to one of five panels, each containing three adjudicators. These panels were differentiated as follows:

Panel 1: Videotape This panel adjudicated the seven performances on videotape, using the same adjudication form as adjudicators who evaluated the live performances (hereafter designated as Live).

Panel 2: Warm Up /Set Up This panel adjudicated ensembles' videotaped set-up and warm-up procedures. Each adjudicator was asked to rate the groups from I+ to V-, score each group from 100 (finest conceivable) to 0 (poorest conceivable), and to write anecdotal comments justifying their choice of score and rating. The videotape was stopped at the beginning of the first performance selection.

Panel 3: Set Up Only This panel evaluated ensembles' set-up procedures only. As with Panel 2, judges were asked to rate and score the ensemble and to write anecdotal comments justifying their choices based only on what they observed. The videotape was stopped at the first note of the warm-up.

Panel 4: School Classification/Name of Organization These adjudicators were given only the ensembles' school classification and name of the organization (wind ensemble, etc.), and asked to rate the ensemble from I+ to V-, score the ensembles from 100 to 0, and justify their selections based on the information provided. Festival administrators used the following classification scheme:

1A: 1-173 (population of school)
2A: 174-360
3A: 361-897
4A: 898 and higher

Two 2A (one of which was a junior high school band), one 3A, and four 4A bands participated in this festival.

Panel 5: Name of Organization This panel was asked to rate and score the ensembles, and justify their choices, based entirely on the name of the organization (wind ensemble, concert band, "tiger band," etc.).

Adjudicators ($N = 15$) were experienced instrumental teachers and judges, including one university director of bands, seven graduate teaching assistants in instrumental conducting and music education, and seven public school directors of bands. To encourage Panel 4 and 5 adjudicators to judge only the intended factors (name of the organization, school classification) rather than the reputation of the ensembles or their directors, the name of the school was removed. The name of the *organization* (wind ensemble, etc.) as it appeared on the Live adjudicators' rating forms, however, remained intact.

Adjudicators' evaluations were examined for interjudge reliability and correlations among panels. Qualitative data (adjudicators' anecdotal comments) for were analyzed for insights, patterns, and similarities.

Results

The correlation between total scores and ratings for the Live adjudication panel was .98 and for the Videotape panel was .99. Correlations among total scores and ratings for the other panels ranged from .86 (Name of Organization) to .99 (Warm Up/Set Up). Therefore, owing to the redundancy of information between scores and ratings, only the scores were used for correlational analysis.

To determine interjudge reliability, an analysis of variance procedure first exposited by Hoyt (1941) was used. Interjudge reliability outcomes for ratings, total scores, and caption scores appear in Table 1. Total score interjudge reliability was .85 ($p < .01$) for the Live panel and .88 ($p < .01$) for the Videotape panel. Interjudge reliabilities for caption scores were generally acceptable, ranging from .66 to .96. Only one caption was not statistically significant (the *Balance* caption among Live adjudicators).

Product-moment correlations between Live and Videotape sets of scores (see Table 1) suggested a generally close contour relationship. Only two correlations did not reach statistical significance: the r of .74 for tone quality (rCRIT [$df = 5$] = .754) and the r of .46 for the quality/suitability caption. In order to test for differences between means of Live and Videotape adjudicators, I calculated dependent means t-tests. Outcomes (Table 1, far right column) revealed a significant difference between total score means and means of all caption scores. In each instance, Videotape adjudicators' scores were lower than Live adjudicators'.

Table 1

Total and Caption Score Interjudge Reliability for Live-Performance and Videotaped-Performance Adjudication Panels

	LV	VT	r^a	*t*
Total	.85**	.88**	.83**	3.21*
Gen. Mus./Int.	.77**	.87**	.81**	3.25*
Ensemble	.72*	.85**	.90**	2.62*
Balance	.66	.82**	.92**	2.66*
Intonation	.82**	.86**	.76*	3.39*
Tone Quality	.92**	.70*	.74	2.79*
Qual. & Suit.	.96**	.72*	.46	3.16

Note. LV = live-performance adjudication panel; VT = videotaped-performance adjudication panel. Critical significance values for interjudge reliability are different from those for correlations.

[a] Correlations among summated sets of scores for live-performance and videotaped-performance adjudication panels.

$^*p < .05$. $^{**}p < .01$.

Interjudge reliability figures for the other panels (see Table 2) reveal only one significant outcome, the *r* of .84 among Warm Up/Set Up adjudicators. Product-moment correlations between panels' summated scores revealed two clusters of significant correlations located at diagonal ends of the matrix: among Name of Organization, School Classification/Name of Organization, and Set Up panels, and among Warm Up/Set Up, Videotape, and Live panels.

Table 2

Interjudge Reliability and Correlations Among Adjudication Panels' Summated Scores

	Total Score IJR	SC+NM	SU	WU+SU	VT	LV
NM	-.43	.81*	.79*	.50	.67	.45
SC+NM	.34		.83*	.51	.64	.61
SU	-.14			.04	.28	.15
WU+SU	.84**				.97**	.87*
VT	.88**					.83*
LV	.85**					

Note. NM = Name of Organization adjudication panel; SC+NM = School Classification/Name of Organization adjudication panel; SU = Set Up adjudication panel; SU+WU = Set Up and Warm Up adjudication panel; VT = videotaped-performance adjudication panel; LV = live-performance adjudication panel; IJR = interjudge reliability.

$^*p < .05$. $^{**}p < .01$.

Content analysis of anecdotal comments made by Name of Organization and School Classification/Name of Organization adjudicators disclosed that four of the six adjudicators used the name of the ensemble as a cue. Specifically, they stated that the term *wind ensemble* connotes a select, well-instrumentated ensemble, whereas other terms (e.g., *concert band, varsity band,* etc.) imply a nonselect, perhaps less well instrumentated ensemble. One judge in the School Classification/Name of Organization group wrote that smaller-classification schools are usually assumed to have a nonselect ensemble with instrumentation deficiencies.

Judges on the Set Up panel focused on organizational aspects, uniforms, and the demeanor of students and director. Positively influencing these judges were a percussion section that entered prior to the group to organize their area; a well-organized, briskly-paced entrance of the ensemble; no extraneous talking or playing; a relaxed and confident manner; attractive uniforms (tuxedoes, especially); and the presence of such instruments as piano and double bass, suggesting the performance of relatively sophisticated literature. In addition to noting the same visual aspects as the Set Up panel, Set Up/Warm Up judges commented on instrumentation, balance, tone quality, intonation, and precision of attacks and releases, agreeing to a surprising extent with the performance adjudicators. An overlong warm-up procedure negatively affected all judges. A variety of intonation, balance, and tone quality weaknesses often were demonstrated during the warm-up procedure, and judges stated that attempts to solve these problems generally seemed impromptu and ineffective. Two of the judges did not favor the tuning of individuals while on the performance stage. Often, the judges singled out the tuning standard (usually the first clarinetist) as having poor tone quality or unstable intonation. All judges commented that for some groups the tuning procedure seemed haphazard and disorganized. Also, all judges frequently noted that the timpani were tuned incorrectly. They reacted negatively to the director tuning the timpani.

Discussion

In this investigation, panels of adjudicators were assembled to evaluate preperformance aspects of bands participating in a rated and scored large-ensemble music festival. Aspects selected for evaluation were name of the organization, school classification, set-up procedure, and warm-up procedure. According to the results, interjudge reliability and correlations among panels were highest when judges had access to aural information.

Investigators (e.g., Fiske, 1977) often point to the unreliability of three-member adjudication panels. In this investigation, three-member panels evaluating *aural* aspects of performances generally demonstrated acceptable interjudge reliability.

Results of the videotaped-performance evaluations may suggest new possibilities for performance evaluation. Interjudge reliability of caption ratings most likely to be affected by videotape--ensemble, balance, tone quality--was acceptable. The tone quality scores, however, were lower than live-performance adjudicators' scores. Perhaps the sound quality of the videotape affected judges' ability to evaluate.

Outcomes of correlations between panels' summated scores (Table 2) suggest that adjudicators allowed access only to visual information directed their attention to similar visual phenomena. Analogously, panels allowed access to aural information seemed to focus on similar aural phenomena.

But the lack of *correlation* between these clusters of panels implied a weak relationship between visual and aural aspects.

Adjudicators in this study who evaluated the warm-up procedure needed little aural information to assign ratings correlating closely with final ratings. Similarly, evaluating clarinet performance, Vasil's (1973) adjudicators required only fifteen seconds to make an informed judgment. It must be cautioned, however, that correlations are a measure of relationship, not cause and effect.

In this investigation, correlations between caption scores and the final ratings were, with one exception, above .89 ($p < .01$), reinforcing frequent assertions that music performance is evaluated in a more-or-less global fashion (Fiske, 1977; Burnsed, Hinkle, & King, 1985; Radocy, 1986). Perhaps the procedure for scoring of captions found on most rating sheets should undergo re-evaluation. Ensembles that demonstrate good general musicianship usually perform well across all captions.

This was an exploratory investigation. Use of three-member adjudication panels, a common festival procedure, has the advantage of closely aligning practical and statistical significance. Further investigations, however, should consider the use of more adjudicators listening to more ensembles. According to Fiske (1977), three-member panels often demonstrate low interrater reliability; he recommended panels comprised of seven to 10 judges. Because adjudication of the live festival performances was intended to serve as the standard of comparison, I chose not to vary the performance order. Future investigations might consider a random reassignment of performance order for different panels, perhaps even for different adjudicators. Lastly, further investigations should attempt to control for judges' prior knowledge of performing ensembles. In this study, correlations may have been affected by judges' prior knowledge of some of the groups.

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STUDENTS' PREFERENCES FOR SELECTED MUSIC FACTORS: COMPARING CLASSROOM MUSIC TEACHERS' PERCEPTIONS TO RESEARCH LITERATURE CONCLUSIONS

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The concept of preference is defined by Price (1986) in his glossary of affective terms as, "An act of choosing, esteeming, or giving advantage to one thing over another" (p. 154). Understanding the developmental process of music preferences may be beneficial to music educators. As Sims (1987) stated:

> Expanding the musical tastes of children, in an effort to create lifelong learners, participants, and consumers of music, has long been a primary goal of music education...Identification of as many variables as possible that affect the acquisition of music preferences by children would be of value to music educators for consideration in determining the optimal times, best technique, and most appropriate materials to achieve attitude-related goals. (p. 16)

Student motivation and participation in music classes can be enhanced as teachers make better choices to help their students acquire a broader appreciation, and perhaps an enjoyment, of a variety of music. Bartlett (1973) suggested that, "the more that is known about creating positive reactions to music, especially art music, the more likely will better teaching methods be developed to achieve these kinds of reactions: (p.302). Although it would be shortsighted to use only music favored by students, knowledge of their preferences may be important in effective selection of materials. As Blyler (1960) said, "The musical interests of children represent only a momentary cross section of their continuing concerns. Yet they are important in education for they provide an excellent place from which to begin musical education" (p.9).

Research designed to identify variables that influence musical preference and their interaction began in the field of psychology. Data collected by psychologists were used to investigate various attitudes and opinions in the early 1930's (Wapnick, 1976). Papers relating to musical preferences and music education were published soon after that time. Early research in this field was summarized by Farnsworth (1950). The original emphasis was on general methodological problems and subject variables such as intelligence, musical aptitude, gender and age, primarily using verbal expression techniques. Since the 1970;s, the focus of research turned to situational factors such as familiarity of music, teaching method, peer influences, and socio-economic status (Wapnick 1976). Greer (1981), Hedden (1980) and Wapnick (1976) presented reviews of the literature dealing with student preferences. In 1980, LeBlanc proposed an interactive theoretical model of preference acquisition that shows different levels as well as different categories of influencing factors. These categories are seen as interrelated and interactionary. Extant research has concentrated on examination of isolated variables using various types of self-report and behavioral measurements. This type of testing discovers cause and effect results of specific variables on preference but in many instances neglects the interactive relationships between the variable categories. Additional investigation might explore the strength of each category and how each influence the other.

Limitations inherent in the music classroom give rise to a special set of circumstances that influence the development of student musical preferences. Music educators are vital to this process since they control the classroom environment. Teachers are influential by their presentation of music, attitudes toward music, attitudes toward students, and methods in which they teach music. Also, teachers' perceptions of student preferences may be important in making appropriate musical choices for motivation, readiness, procedures, rewards, and other educational purposes.

Student listening preferences concerning the variables of tempo, style, and melodic complexity have been documented by research. However, no studies have been conducted to discover student singing preferences as observed by music teachers in the classroom setting relating to these variables. The purpose of this study was to compare music teachers' assessment of student singing preferences with extant research preferences regarding musical listening variables of tempo, style, and melodic complexity. Such a comparison may provide new insight into the relationship between musical variables and environmental variables. These specific musical variables were chosen for this study, because (a) they are easily perceived by teachers, (b) easily controlled by teachers, and (c) research results are clear regarding the relationship of these variables to student preference.

In this study, survey results of music teachers' responses were compared with results found by researchers concerning the musical variables of tempo, style, and melodic complexity (as determined by the number of different pitches). The three null hypotheses tested in this study were:

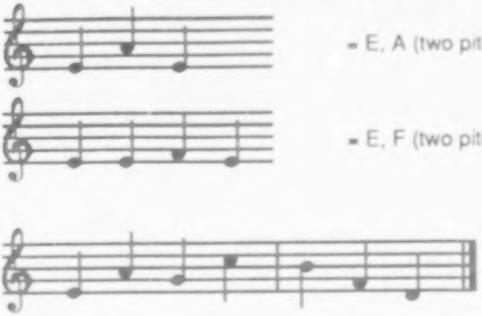
1. There will be no significant difference among the tempos of students' favorite songs, as indicated by their music teachers, and student tempo preferences described in the literature (Baker, 1980; Flowers, 1988; Geringer & Madsen, 1987; LeBlanc, 1981; LeBlanc & Cote, 1983; LeBlanc & McCrary, 1983; LeBlanc, Colman, McCrary, Sherrill & Malin, 1988; Sims, 1987).
2. There will be no significant difference among the styles of students' favorite songs, as indicated by their music teachers, and student style preferences described in the literature (Blyler, 1960; Greer, Dorow, & Hanser, 1973a; Greer, Dorow & Randall, 1974; Greer, Dorow, Wachhaus & White, 1973b; LeBlanc, 1979; LeBlanc, 1981; May, 1985; Rogers, 1957).
3. There will be no significant difference in the melodic complexity of students' favorite songs as indicated by their music teachers, and student melodic complexity preferences described in the literature.

For the purpose of this study, the following definitions were used:

Slow Tempo -	M.M.=57-84.
Medium Tempo -	M.M.=94-108
Fast Tempo -	M.M.=126-147.
Folk Music -	traditional, cultural music written by an unknown composer.
Composed Music -	songs written specifically for children to be used in school textbooks.
Patriotic Music -	songs with texts expressing feelings and qualities that reflect loyalty to the UnitedStates.
Pop Music -	songs from the "Top 40" genre.

Melodic Complexity - number of different pitches used to create the melody (see Figure 1).

Figure 1. Examples of assessment of melodic complexity by number of pitches.



= E, A (two pitches)

= E, F (two pitches)

= E, A, G, C, B, F, D (seven pitches)

It was assumed that teachers having taught for a minimum of five years would have the experience needed to evaluate reliably musics their students like. It was also assumed that teachers were able to recall the approximate performance tempos used in the classroom.

The scope of this study was limited to a survey of teachers from two specific midwestern communities. Results may not reflect preferences of students elsewhere.

Results of this study may provide important information to teachers regarding song selections made for accomplishing appreciation-related goals. Results may also provide insight for researchers concerning future preference studies.

Methods and Procedures

Thirty-one elementary music educators from two midwestern communities (Bellevue, Nebraska and Council Bluffs, Iowa) were surveyed for this study. These communities were selected based on their similarity to sample populations used in previous research (Blyler, 1960; Greer et al, 1974; LeBlanc, 1979; LeBlanc & Cote, 1983; LeBlanc & McCrary, 1983; May, 1985; McMullen, 1974; Shehan, 1985; Sims, 1987) and their accessibility. Characteristics included (a) midwestern geographical location, (b) ethnic representation within a caucasian majority, and (c) middle to low socioecconomic status. A list of teachers that had taught elementary music for at least five years was obtained from the district offices of both communities. It was assumed that this level of experience would permit teachers to accumulate enough experience with their students to accurately observe and report group preferences.

A survey was designed and evaluated based on teacher interviews which asked them to name (a) two of their students' favorite songs for each grade (grades 1-6) based on the current year's repertoire, (b) the source of each song (e.g., series textbook, octavo, songbook) and (c) the approximate tempo usually selected for singing the song in the classroom. At the end of the survey teachers were asked in an open-ended question to supply information concerning musical characteristics they found to be consistently favored by their students.

Tempo classifications for categorizing data were derived from work by LeBlanc and McCrary (1983), LeBlanc et al. (1988), and Sims (1987). These categories were then given as the range of tempos from which the teachers were to select in the survey.

Style categories were derived from style designations marked in the original sources. If a style was not indicated in the music, the researcher categorized it based on selected characteristics. No restrictions were put upon the possible source of the song. Categories derived from the survey included "folk", "composed", "patriotic", and "pop".

Melodic complexity has been defined by McMullen (1974) as the number and redundancy of pitches. Because of the established independence of these two variables and accessibility to specific comparisons with McMullen's study, the researcher chose to investigate complexity only as defined by the number of different melodic pitches (see Figure 1).

Thirty-five surveys were mailed to the addresses of the Bellevue and Council Bluffs school teachers, as provided by the school district offices. Accompanying the survey was a cover letter with directions and a request to complete and return the survey in the enclosed, self-addressed envelope. The participants remained anonymous. A follow up letter was sent out two weeks after the initial mailing prompting those who had not yet responded. Results of the study were made available to teachers who returned the enclosed, stamped postcard.

Results

Of the 31 surveys mailed to elementary teachers, 15 (48%) were returned. From the surveys analyzed, a total of 155 usable songs was compiled. Other songs were listed with insufficient source references making them inaccessible for analysis. Twenty-five songs were compiled for the first grade; 28 songs for the second grade; 28 songs for the third grade; 28 songs for the fourth grade; 25 songs for the fifth grade, and 21 songs for the sixth grade. Of the songs indicating a specific source, 78 were from textbooks (63%), 26 were from other song collections books (21%), and 19 were from octavos (15%). Some respondents gave incomplete information for each song causing a difference in the total number of responses for each variable per grade level. Each song was analyzed for its tempo, style, and melodic complexity. The results were then compared to the findings of extant music research concerning those variables.

The first hypothesis addressed whether there was a significant difference between the preferred tempos indicated by researchers and those reported by music teachers. Previous studies have shown that students prefer fast tempos for listening. LeBlanc's studies (1983,1985) dealing with tempo as the isolated variable found students to prefer fast tempos of M.M.=172-271. However, these studies used instrumental listening examples and since most songs used for singing in grades 1-6 do not have these extreme tempi, a slower "fast" tempo was used in the present study (M.M.=126-147). This approximates tempos used by Sims (1987). Because the number of students selecting each tempo was not reported in all previous tempo preference studies, it was not possible to do a direct comparison. However, a one-sample Chi-square test was applied to see if teachers would list a significantly greater number of songs from the "fast" category.

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Teachers reported a student preference for medium tempos (M.M.=94-108) for grades 1-6. Results indicate that 18% of the songs were sung at slow tempos, 55% at medium tempos, and 28% utilized fast tempos. A one-sample Chi-square test (χ^2, N=119)=26.08, p<.001 indicated significant preference for medium tempi.

Sims' (1987) study of tempo suggested a difference in listening preference of children from preschool through third grade versus grades fourth through sixth. This parallels other researchers' findings of a pivotal change in taste between the grades of three and four (Baumann, 1960; Greer et al, 1974; May, 1985;; Rogers, 1957). A Chi-square test was applied to investigate whether teachers' perceptions of student preferences regarding tempo were different for different age groups. In this study, teachers reported that grades 1-3 preferred medium tempos (52%), while grades 4-6 also were reported to prefer medium tempos (57%) (see Table 1). The Chi-square test indicated no significant difference between grade groups; $\chi(2, N$=119)=.40, p>.05.

Table 1

Response Distribution of Frequency of Favored Tempos by Grade Group

	Tempo			
Grade	Slow	Medium	Fast	Total
1 - 3	12a	32	17	61
	20b	52	28	
	57c	49	52	
	10d	27	14	
4 - 6	9	33	16	58
	16	57	27	
	43	50	48	
	7	28	13	
Total	21	65	3	119

Note. a=frequency, b=% of row, c=% of column, d=% of total.

As a result of these tests, the first null hypothesis was rejected. There was a difference in tempo preference between the literature and teacher observations. Analysis indicated that medium tempos, as compared to fast or slow tempos, were preferred for singing. Results indicated, according to the surveyed teachers, no difference in tempo preferences between grade groups or increase of preference for fast tempos in the upper grades.

The second hypothesis was formed to discover whether there was a significant difference between the preferred styles of music as indicated by researchers and the responses of surveyed music teachers. Researchers in previous studies have made a priori selection and categorization choices, enabling them to cover a wide spectrum of styles. This study was limited by post hoc application of style categories derived from teacher responses. Therefore, the categories which evolved from the survey were more limited and only included "folk", "composed", "patriotic", and "pop".

LeBlanc (1981) noted that style was the strongest factor influencing listening preference. Previous research has indicated a strong preference of pop music over all other genres. Research results document that this preference increases with age, again noting distinct changes between grades three and four (Greer et al, 1973a, 1973b, 1974; LeBlanc 1979, 1981; May, 1985; Rogers, 1957; Shehan, 1985). Folk music was ranked lowest on the style scale in LeBlanc's study (1979) involving 15 styles of music.

The results of this survey show that over all, folk songs were the preferred style of elementary students. Forty-nine percent of the indicated songs were "folk", 34% were "composed", 9% were "patriotic" and 8% were "pop". A one-sample Chi-square test, $\chi^2(3, N=135) = 64.62$, $p<.001$, indicated this finding to be significant.

Style preferences were also observed by grade group. Teachers indicated a preference for "folk" in grades 1-3 with 62% of the songs in this category. "Composed" was the next in favor comprising 31% of the songs listed. There were no "pop" songs chosen as favorites for this age group by music teachers. Teachers indicated a tie between "folk" and "composed" for grades 4-6, each with 26 selections (37%). "Pop" music constituted 16% of the favorite songs listed (see Table 2). The Chi-square test ($\chi^2[3, N=135]=14.92$, $p<.05$), indicated grades 1-3 and 4-6 have significantly different stylistic preferences according to these teachers.

Table 2

Response Distribution of Frequency of Favored Musical Styles by Grade Group

	Style				
Grade	Folk	Composed	Patriotic	Pop	Total
1 - 3	40a	20	5	0	65
	61b	31	8	0	
	60c	43	42	0	
	30d	15	4	0	
4 - 6	26	26	7	11	70
	37	37	10	16	
	39	56	58	1	
	19	19	5	8	
Total	66	46	12	11	135

Note. a=frequency, b=% of row, c=% of column, d=% of total.

When comparing "pop" songs to all other styles for grades 1-6, "pop" songs only comprised 8% of the total. Other styles comprised the other 92% of the favored songs. The one-sample Chi-square test $\chi^2(1, N=144) = 1.1.36$, $p<.001$ indicated that other styles of music significantly outweigh "pop" style choices.

A comparison of "pop" music versus other styles by grade group shows that teachers reported that grades 1-3 unanimously preferred other styles of music. Grades 4-6 reportedly still preferred other styles, but pop music made up 10% of their preferred music list (see Table 3). A Chi-square test, χ^2 (1, N=144) =11.12, p<.05 indicated a significant increase of preference for pop music as students got older.

Table 3

Response Distribution of Popular vs Other Styles by Grade Group

	Style		
Grade	Pop	Other	Total
1 - 3	0	73a	73
	0	100b	
	0	55c	
	0	51d	
4 - 6	11	60	71
	15	84	
	100	45	
	8	42	
Total	11	133	144

Note. a=frequency, b=% of row, c=% of column, d=% of total.

As a result of these tests, the second null hypothesis was only partially supported and therefore rejected. Musical genres represented by the songs indicated in the survey do not support research results results which name pop music to be the preferred style for music listening. Although pop music was not the preferred style, there was a significant difference in teacher reports of student preference for different age groups. The upper grades were reported to prefer pop styles (15%) to a greater degree than the lower grades (0%).

The third hypothesis was formed to discover if there was a significant difference between the number of pitches in preferred melodies found by McMullen (1974) and those reported by the music teachers. McMullen's study used melodies contrived of five, seven, and twelve pitches and found a preference for melodies made of five or seven pitches over melodies made of twelve pitches. In the present study, the total number of different pitches used in all the songs reported for grades 1-6 was tabulated.

Overall, songs made of seven pitches (25%) constituted the preferred melodies. Melodies made of eight pitches (20%) and nine pitches (15%) were preferred next. Results range from melodies consisting of 3 pitches to melodies consisting of 13 pitches. High numbers (83%) were located in the mid-range, (5-9 pitches) forming a somewhat normal distribution with the exception of an elevated preference for 11-note melodies.

The age factor relating to this variable could not be accurately compared with previous literature. McMullen's study tested only fourth grade students from the elementary school level. Due to the small number of examples available for this study, it was not prudent to make a direct comparison using only fourth grade results. Therefore, the researcher extracted and examined only the three complexity categories (5, 7, and 12 pitch melodies) used in

McMullen's study, combining totals from all six grades. These totals support McMullen's finding, indicating student preference for melodies of seven pitches (69%) and five pitches (29%) compared to melodies with twelve tones (2%). A one-sample Chi-square test $\chi^2(2, N=48) = 32.37, p < .001$ indicated this to be significant.

Results of these tests support previous research literature. Therefore, the third null hypothesis was not rejected. Medium levels of complexity, as defined by the number of different pitches, were found in the preferred melodies reported by teachers in this study.

Discussion

Several points of interest appear as a result of the data obtained from this study. One important difference between a study of the "natural" classroom sitaution and conditions existing during experimental research sessions is how students experience the music they are rating. Experiments often present music examples to subjects only once before preference choices are made. In this study, student preferences were observed using songs that had been actively experienced in class over a period of time. Therefore, a variety of variables not present in the experimental research cited could be influencing student preferences in this study. For example, a student's preceived success with the song could be an influential factor. It also should be noted that most of the previous research examined listening preference responses made by children while this study investigated prefereces for songs sung in music class as reported by teachers.

When tempo was investigated as an isolated variable, subjects indicated preference for faster speeds. Even in other research not directly studying tempo, fast tempo stood out as a preferred characteristic. Conflicting results of this study may be the result of some confusion between the terms "speed" and "rhythm". Definite beat patterns, syncopated rhythms, and subdivided beats may cause a feeling of brightness, or liveliness to the music, resulting its being preferred. Gordon (1989) differentiates between "macro beat" (fundamental beats), and "melodic rhythm" (rhythm of the text). This rhythmic syntax, the arrangement of patterns within a series of patterns, is a perception skill that improves only with age and experience. Young children may be apt to confuse levels of rhythms and perceive songs with fast melodic rhythms over a slow macro beat, as "fast songs". This also may explain why tempo preferences stayed the same throughout the six grades.

Previous research has consistently reported preferences leaning toward "pop" styles of music. While it is possible that this study challenges previous literature, it is more likely that teachers did not report very many "pop" songs because this style is not used very often in the classroom. The lack of stylistic variety may come from limited exposure instead of lack of preference. Many educational theories/methodologies, such as Kodaly and Orff-Schulwerk, stress the use of folk music in the elementary school for their various purposes. Folk music tends to dominate music textbook repertoire. The music choices teachers make for educational purposes may necessitiate limiting stylistic variety. Nevertheless, such an overwhelming amount of music from only two genres may suggest a lack of teaching for music appreciation for all types of music. Because so many songs of the "folk" genre were reported as students' favorites, it may be unwise to make broad generalizations about student preferences. Teachers should be encouraged that although "pop" music may be what many students prefer for listening, it is not the only genre to which they respond favorablly.

Survey results of this study concerning melodic complexity support previous research. Medium complexity was found to be a preferred musical component. Even so, slight preference displayed for 11-note melodies warns against presuming that individual variables alone are reliable indicators of preferred music. Most of these songs come from the sixth grade list and included two "pop" songs. "Pop" songs and songs composed for older children tend to increase in difficulty. (Eleven-note songs featured passing tones and chromaticism). It is interesting to note that these songs were of medium tempo, but the melodic rhythm had predominant syncopation.

Answers given for the final, open-ended question included many interesting observations. Song texts received the most comments. "Humorous", "age-appropriate", "meaningful", and "easily understood" lyrics were mentioned as indicators of a preferred song. Many described the best tempos as being "bright" or "lively" or "upbeat" and remarked on the importance of rhythm. One teacher observed that, "Songs I can approach in a variety of ways so that they [students] really become familiar [with them] and it [can grow] on them, such as adding instruments, dramatization, movement, partner songs" were preferred by students. This supports results of Shehan's (1984) study, that heuristic approaches are better than didactic approaches. Social influence was also addressed. One teacher said, "traditional music known by older or respected peers, and popular 'hits' currently receiving much attention on radio or television" were what sudents liked. This supports research literature concerning authority and peer influences on preference.

Results of this study suggest that a combination of variables and variable categories give a more accurate picture of developmental influence than individual characteristics. One strength of LeBlanc's theory seems to be its concern for relationships and interaction between influencing variables. Even though specific variables need to be explored, a combination of musical variables may be a more comprehensive way to investigate the developmental process of preference decisions. One surveyed teacher commented, "An aesthetic quality is found when text, melody, and so forth all fit together. This quality can make a song a favorite even if it doesn't follow the 'usual' categories".

Research shows that students can respond favorably to a variety of music. Teachers should be both encouraged and challenged to know that although students may already possess certain musical preferential tendencies, the music educator has the ability to encourage positive responses to other types of music.

This article is based on the author's master's thesis completed at the University of Missouri-Kansas City, in 1991.

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ATTITUDES OF HIGH SCHOOL BAND DIRECTORS TOWARD THE VALUE OF MARCHING AND CONCERT BAND CONTESTS AND SELECTED ASPECTS OF THE OVERALL BAND PROGRAM

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Band contests became established components of music education in the United States beginning with the National School Band Contests of the 1920s and 1930s (Moore, 1968). In 1973, nearly 2 million students participated in high school marching and concert band contests throughout the United States (Osterndorf & Horn, 1976). In Ohio, for example, the Ohio Music Education Association (OMEA) annually sponsors high school marching and concert band contests at the district and state levels. Bands that receive an overall superior (I) rating at one of the district level contests may then advance to the OMEA State Finals Contest. The 1990 OMEA State Marching Band Finals Contest featured 125 high school bands, involving over 10,000 students from 300 high schools that had originally participated at the district level, or 40% of the high school bands in the state (Guegold, 1990a). Furthermore, the 1991 OMEA-sponsored State Concert Band Contest included 182 bands from 17 district level contests ("1991 Contest Ratings," 1991).

In spite of the popularity of band contests and the large number of students that participate in these contests, band directors' opinions concerning the effects and influence of band contests on high school band programs are generally divided (Burnsed, Sochinski, & Hinkle, 1983). This division of opinion appears to stem from three schools of thought concerning band contest participation: (a) bands should exclusively participate in concert band contests, (b) bands should exclusively participate in marching band contests, and (c) bands should participate in both marching and concert band contests. Of the three schools of thought concerning band contest participation, there seems to be little controversy in regard to the contributions associated with concert band contests, but there seems to be a particular division of opinion in regard to the attitude of band directors toward the relevance of marching band competition and its effect on the school band program (Burnsed, Sochinski, & Hinkle, 1983).

Marching band competitions became increasingly popular during the decade of the 1970s (Culbert, 1979). In studies related to marching band contest popularity, Rogers (1985) conducted an investigation concerning marching band contest participation and found that on a national scale, 62% of 324 high school bands surveyed from four different regions of the United States participated in marching band contests. Guegold (1990b) reported that 47 states sponsored marching band contests.

The advantages or disadvantages associated with marching band competitions and their influence on school band programs are still being formulated by music educators. Drake (1981) administered a National Band Association Questionnaire to 164 band directors around the country. Results of the questionnaire revealed that marching band contests were considered the most problematic aspect of the high school marching band. One of the problems associated with marching band contests has been the lack of exposure to a variety of musical styles (Garrison, 1986). Whitwell (1972) stated that exposing marching band students to only four or five musical selections during a marching band season which usually involves 10-12

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weeks during the fall semester plus summer rehearsals is a concern of music educators. In a study conducted by Burnsed and Sochinski (1983) it was found that some bands only rehearsed one marching band show (the same music and drill continually) from the summer months until the end of the marching band season in hopes of winning competitions. A similar study by Snapp (1980) raised questions concerning the additional amount of extracurricular practice time that marching band competition requires of its participants. The study by Snapp also suggested that marching bands that perform the same four or five selections during the marching band season may not develop strong sight-reading skills. In other related literature, Garrison (1986) reported that marching band critics believe that public attention given to marching band contest participation prevents the school communities from realizing what should be emphasized in music education.

In contrast to negative opinions expressed concerning marching band contest participation, Wells (1976) stated that marching band contests provide an aesthetic experience for their participants which is experienced both intellectually and emotionally. A belief in the aesthetic potential of marching band contests is supported by band directors who have adopted the drum corps style for their competitive bands (Garrison, 1986). Other research supporting marching band contest participation has stated that the improvement in student motivation and discipline as well as improvement in parental, public, and administrative support outweighs the musical disadvantages (Clem, 1978).

While the importance of participation in high school band contests is discussed as it relates to students' playing skills, motivation, sight-reading abilities, and overall musicianship, the attitudes of band directors concerning band contests is still a puzzling issue. Are there differences in attitudes of high school band directors whose bands participate (a) exclusively in concert band contests, (b) exclusively in marching band contests, or (c) in both marching and concert band contests? While it is believed by some band directors that band contest participation is a necessary part of public school music education at the high school level, little systematic research has been conducted on this topic.

The purpose of this study was to explore certain attitudes held by band directors regarding marching band contests, concert band contests, and some other aspects of the band program. Specifically, this study was designed to determine whether any significant differences existed between attitudes of band directors who participated exclusively in concert band contests; those who participated exclusively in marching band contests; and those who participated in both marching and concert band contests.

Procedure

Subjects were randomly selected from a list of over 300 high school band directors from 17 Ohio Music Education Association districts whose bands participated in the 1990 State Marching Band Finals and/or the 1991 State Concert Band Contest. The researcher-developed "Ohio Band Questionnaire" (OBQ) was sent to 200 high school band directors. One hundred and thirty-three completed questionnaires (N = 133) were received from the 200 high school band directors, for a return rate of 66.5%.

The OBQ was developed to record subjects' responses to 30 descriptive items intended to assess directors' attitudes regarding the categories of (a) marching band contests, (b) concert band contests, and (c) school band programs.

Results

Data from the OBQ were analyzed for possible significant differences ($p < .05$) utilizing one-way ANOVA procedures. The dependent variable consisted of the 30 OBQ descriptive items, each having a 4-point Likert-type response scale. A separate one-way ANOVA was computed for each of the 30 descriptive items from the OBQ. The independent variable was band contest participation, which was divided into three levels: (a) concert band only (CBC) contest participation, (b) marching band only (MBC) contest participation, and (c) both marching and concert band (MBC/CBC) contest participation.

The 30 items relating band director's attitudes are grouped under three headings: (a) "Marching Band Items," (b) "Concert Band Items," and (c) "Band Program Items." Of the 30 descriptive items found in the OBQ, 13 items pertain to marching band contests, 10 items pertain to concert band contests, and 7 items pertain to the overall high school band program.

Marching Band Items

Analyses were computed using separate one-way ANOVAs on the 13 descriptive items which pertain to marching band contests. Significant mean differences were found among MBC, CBC, and MBC/CBC directors' attitudes in 11 of the 13 descriptive items: #1, #2, #3, #4, #5, #7, #9, #10, #14, #15, and #19. No significant differences were found in items #12 (conteSt classification) and #13 (decision to participate).

Post hoc analyses, in which post hoc tests based on a two-tailed test criterion are reported as a t-value in which the pooled mean square error from the analysis of variance and the t-value based on the separate variance estimates are analyzed, were computed comparing the directors' attitudes on the 11 marching band items showing a significant difference (see Table 1). On most of the items, MBC and BMC were not significantly different, item #10 being the only exception. MBC directors (item #10) disagreed that an enforced limit should be placed on a band's participation in district marching band contests. Table 1 shows that generally CBC directors expressed a difference in attitude from MBC and MBC/CBC directors on descriptive items pertaining to marching band contests. The mean response ratings by MBC and MBC/CBC directors across the majority of items were higher than the mean response ratings of CBC directors. Band directors whose bands participate in marching band contests (MBC and MBC/CBC) generally viewed marching band contests and factors related to students' playing skills, self-esteem, and motivation, as well as other factors, more positively than directors whose bands do not participate in marching band contests (CBC).

Table 1

Summary of Post Hoc Comparisons for Marching Band Descriptive Items

Item	Text	Post Hoc Analysis		
1.	Improvement in students' playing skills	CBC	MBC/CBC	MBC
	*Sample mean: 3.157 SD: .8948	2.3514	3.4651	3.50
2.	Enhancement of students' self-esteem	CBC	MBC/CBC	MBC
	*Sample mean: 3.30 SD: .8070	2.4865	3.58	3.90
3.	Enhancement in students' motivation	CBC	MBC/CBC	MBC
	*Sample mean: 3.43 SD:. 8470	2.5946	3.744	3.90
4.	Band program enrollment retention	CBC	MBC/CBC	MBC
	*Sample mean: 2.827 SD: 1.055	1.675	3.267	3.30
5.	Recruitment for feeder program	CBC	MCB/CBC	MBC
	*Sample mean: 2.87 SD: 1.018	1.864	3.255	3.30
7.	Improvement in students' sight-reading	CBC	MCB/CBC	MBC
	*Sample mean: 1.78 SD: .8881	1.297	1.965	2.10
9.	Students' participation in district contests	CBC	MCB/CBC	MBC
	*Sample mean: 2.646 SD: 1.16	1.567	3.011	3.50
10.	Contest participation limit enforcement	MBC	MCB/CBC	CBC
	*Sample mean: 2.78 SD: 1.22	1.80	2.65	3.35
14.	Ratings versus caption awards	MBC	MBC/CBC	CBC
	*Sample mean: 2.48 SD: 1.17	1.80	2.27	3.16
15.	Performance quality	CBC	MBC/CBC	MBC
	*Sample mean: 3.06 SD: .9829	2.08	3.40	3.70
19.	Sanctioned contests	CBC	MBC/CBC	MBC
	*Sample mean: 2.65 SD:. 1.28	1.40	3.12	3.20

N = 133.
Means connected with a solid line are not significantly different.
CBC: Designates concert band only.
MBC: Designates marching band only.
MBC/CBC: Designates both marching and concert bands.

Concert Band Items

Analyses were computed using separate one-way ANOVAs on the 10 descriptive items pertaining to concert band contests. No significant mean differences were found among MBC, CBC, and MBC/CBC directors on 8 of the 10 descriptive items: #21 (improvement in playing), #22 (enhancement of self-esteem), #23 (enhancement in motivation), #24 (band program enrollment retention), #25 (improvement in sight-reading), #26 (participation in district contests), #27, (classification based on school enrollment) and #28 (participation decision, made by band directors). Significant mean differences were found among the directors on items #29 and #30. These findings indicate attitudinal agreement among MBC, CBC, and MBC/CBC directors about the benefits of concert band contests.

Post hoc analyses were computed comparing the directors' attitudes on the two items showing a significant difference (see Table 2). Pertaining to item #29, MBC/CBC directors expressed significantly higher attitudes than MBC and CBC directors about the ability of concert band contests to improve overall performance quality. MBC directors expressed less concern about concert band contests than CBC and MBC/CBC directors (item #30). The analysis also indicates that band directors from the CB and MB/CB category would be more disappointed than MB directors if sanctioned concert band contests were not scheduled (see Table 2).

Table 2

Summary of Post Hoc Comparisons for Concert Band Descriptive Items

Item	Text	Post Hoc Analysis		
29.	Improvement in performance quality	MBC	CBC	MBC/CBC
	*Sample mean: 3.78 SD: .5271	3.50	3.62	3.88
30.	Sanctioned concert band contests	MBC	CBC	MBC/CBC
	*Sample mean: 3.51 SD: .8221	2.70	3.43	3.65

N = 133.
Means connected with a solid line are not significantly different.
CBC: Designates concert band only.
MBC: Designates marching band only.
MBC/CBC: Designates both marching and concert bands.

Band Program Items Analyses

Analyses were computed using separate one-way ANOVAs on seven descriptive statements which pertain to the overall high school band program. Significant mean differences were found among MBC, CBC, and MBC/CBC directors' attitudes in five of the seven descriptive items: #6, #8, #16, #17, and #18. No significant differences were found in items #11 (marching band performance at football games) and #20 (marching band and concert band schedule).

Post hoc analyses of items #6, #8, #16, #17, and #18 were computed comparing directors' attitudes (see Table 3). MBC and MBC/CBC expressed a similar attitude pertaining to items #8, #16, #17, and #18. In reference to these items, CBC directors viewed the high school band program differently than MBC and MBC/CBC directors. In particular, CBC directors indicated a difference in attitude concerning the high school band program and marching band related items from the OBQ. The majority of the mean response item ratings by MBC and MBC/CBC directors were higher than mean response ratings of CBC directors. Pertaining to descriptive item #6, a difference in attitude exists between all three levels of directors (MBC, CBC, and

MBC/CBC) concerning students' preference of marching band or concert band.

Table 3

Summary of Post Hoc Comparisons for Band Program Descriptive Items

Item	Text		Post Hoc Analysis		
6.	Students' band preference		CBC	MCB/CBC	MBC
	*Sample mean: 2.66	SD: 1.035	1.945	2.88	3.50
8.	Students' music preference		CBC	MCB/CBC	MBC
	*Sample mean: 2.31	SD: .8909	1.837	2.46	2.80
16.	Community support/school spirit		CBC	MCB/CBC	MBC
	*Sample mean: 3.18	SD: .9198	2.37	3.47	3.60
17.	Parental support		CBC	MBC/CBC	MBC
	*Sample mean: 2.54	SD: 1.11	1.67	2.82	3.40
18.	Primary marching band role		MBC	MBC/CBC	CBC
	*Sample mean: 1.86	SD: .9753	1.50	1.69	2.35

N = 133.
Means connected with a solid line are not significantly different.
CBC: Designates concert band only.
MBC: Designates marching band only.
MBC/CBC: Designates both marching and concert bands.

Discussion

Many high school bands in the United States today participate in marching and concert band contests. The purpose of this study was to determine if there were differences in attitudes among high school band directors whose bands participate exclusively in marching band contests (MBC), those whose bands participate exclusively in concert band contests (CBC), and those whose bands participate in both marching and contest band contests (MBC/CBC) on items pertaining to marching band contests, concert band contests, and the overall band program.

The results indicate that band directors' attitudes differ with regard to marching band contest participation. MBC and MBC/CBC directors have a more positive attitude than CBC directors. MBC and MBC/CBC directors view marching band contest participation as more beneficial to the students involved than do CBC directors. Perhaps this attitude difference is the cause of the decision to participate or not participate in marching band contests rather than the result; perhaps the responses reflect a difference in philosophical perspective between directors whose bands do and do not participate in marching band contests. Possibly, directors whose marching band emphasis is on musical aspects may be more inclined to participate in marching band contests than directors who view marching band as primarily a show band for entertainment at football games. Guegold (1990a) notes that "drum corps" style of marching band is prominent today. In drum corps style, the musical effect is enhanced through visual portrayals with drill and flags. It could be that MBC and MBC/CBC directors who are confident with drum corps style and view it as a music education experience tend to participate in marching band contests. Conversely, CBC directors may not have had training in combining the elements of drum corps style performance, or they may not view it as an effective means of music education. Therefore, they refrain from having their bands participate in marching band contests where their performances would be out of date, most likely resulting in a negative experience for their students, and yielding limited educational benefits. Other less favorable attitudes concerning marching band contests that exist among CBC band directors may be related to their unwillingness or inability to spend the additional amount of extracurricular rehearsal time necessary for a competitive marching band. This view is consistent with findings by Snapp (1980).

Few differences in attitudes were found among MBC, CBC, and MBC/CBC directors concerning items from the OBQ related to concert band contest participation. Band directors have a positive attitude toward concert band contest participation, all indicating that they think it is educationally beneficial to their students. The consensus among band directors is that concert band contest participation improves students' musicianship, builds character, and helps to sustain a sound instrumental music program. Perhaps this positive attitude could be based on the long tradition associated with concert band contests and the familiarity of concert band contests among band directors.

Based on results from this study, it may be concluded that CBC directors expressed uniformly higher attitudes than did MBC and MBC/CBC directors on all items pertaining to the band's function in the school band program. Only in projecting their impressions of students' preferences for marching band did all three groups of directors differ in their attitude. CBC directors seem to be the most negative on items concerning the marching band's place in public education. Perhaps this attitude is connected to the CBC directors' views that concert band is linked to a strong instrumental music program and develops students' musicianship skills, promotes musical aesthetics, and is an antithesis for the marching band which is a "required" nonmusical performing group. Conversely, the difference in attitude expressed by MBC and MBC/CBC directors concerning the school band program indicates that marching band is an important part of the high school instrumental music program. Perhaps these directors think that marching band contest participation will improve the overall musicianship of the students and that it is beneficial for developing an educationally sound school band program at the secondary level.

Summary and Conclusions

When responding to items about the marching band, the three groups of directors divide into those who participate in marching band contests (MBC and MBC/CBC) and those who do not (CBC). When responding to items about concert band, there is little attitudinal difference among the three groups. When responding to items about the high school band program, the three groups divide on the issue concerning the role of the marching band. Some directors expressed higher attitudes towards programs and activities in which they participated. It is immaterial whether the beliefs or attitudes caused the participation or whether participating developed greater understanding and more positive attitudes. Perhaps some of these directors place a great deal of value in extramusical or even educational objectives. Regardless, these data suggest that attitudinal differences exist and that those differences are projected onto the preferences ascribed to the students of these directors.

Band directors may want to examine the purpose of having the marching band in today's secondary public schools. Is the high school marching band an effective means of music education? Does participation in marching band, and/or marching band contests improve students' musicianship, and provide a basis for musical aesthetics, or does it simply provide an entertainment medium for the public?

Since very little systematic research exists today pertaining to high school band directors' attitudes towards marching and concert band contest participation, it is recommended by this researcher that more research should be conducted pertaining to this topic. Administration of a questionnaire in a study designed to compare band directors of different experience levels (10 years, 20 years, etc.), band director attitudes representing different states, and programs that emphasize different marching band styles and different contest requirements are fruitful areas for further research.

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THE EFFECT OF CHORAL PROGRAM SIZE, TEACHER EXPERIENCE, AND TEACHER EDUCATION LEVEL ON THE SELECTION OF HIGH SCHOOL CHORAL MUSIC LITERATURE

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Doctor of Musical Arts
University of Missouri-Kansas City, 1991

Abstract

The purpose of this study was to determine whether choral program size, teacher experience, and teacher education affect choral music literature choices for high school choirs. Of additional interest was whether a generally accepted hierarchy of music selection criteria exists. All high school choral music educators in Missouri were sent surveys to obtain data concerning (a) choral program size, teacher experience, and teacher education level, (b) three representative choral works from the 1990-1991 repertoire, and (c) the reasons why these pieces were selected for use with the choirs.

The Missouri Choral Literature Survey (MCLS) was mailed to 576 high schools, and 148 (25.7%) usable surveys were returned. Respondents reported that (a) 64.2% of choral programs were small (one or two curricular ensembles) and 35.8% were large (three or more curricular ensembles); (b) 23.1% had one to three years of experience versus 76.9% reporting four or more years experience; and (c) 55.4% held Bachelor's degrees while 44.6% had earned graduate degrees. Selected representative music was analyzed according to four characteristics (sacred versus secular text, accompaniment, language, and style). Results indicated that (a) sacred and secular texts were almost evenly distributed (52.7% sacred, 47.3% secular), (b) accompanied works comprised 65.0% versus 35.0% unaccompanied, (c) pieces in English comprised almost 70% of the listed pieces, and (d) 20th century works comprised almost 70% of the total repertoire reported. Choral educators with small programs performed significantly ($p < .05$) more accompanied music, more pieces in English, and more 20th century music. Teachers with less experience chose significantly ($p < .05$) more accompanied music and more 20th century works. Teachers with graduate degrees selected significantly ($p < .05$) more music with sacred texts.

The study also found that significant correlations ($p < .01$) existed between selection criteria hierarchies used by teachers with different choral program sizes, experience levels and education levels. High priority criteria included personal appeal to the teacher, musical quality, teaching goals, and preparation factors. Student appeal, programming, text, and audience appeal were found to be moderately important, while style/historical factors, accompaniment, score design/clarity, and cost were least important. This study provides information which may assist in the development of more systematic high school choral literature selection. Further research is suggested that would continue to examine the issue of course content in high school choruses.

THE EFFECT OF A SYSTEMATIC CHORAL WARM-UP STRATEGY ON STUDENT PTICH-MATCHING SKILLS, KNOWLEDGE OF INTONATION CONCEPTS, AND SELF-REPORTED ATTITUDES TOWARD SINGING

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Doctor of Musical Arts
University of Missouri-Kansas City, 1991

Abstract

Many authorities in choral music education agree that good intonation is an essential attribute of choral performance. Methods used to improve choral ensemble intonation are varied and may be based upon inaccurate assumptions.

The purpose of this study was to investigate the influence of a systematic choral warm-up strategy on students' pitch-matching skills, knowledge of intonation concepts, and self-reported attitudes regarding their ability to discriminate pitch and sing in tune. Advanced high school chorus students (N=130) representing four suburban school systems within the states of Missouri and Kansas served as subjects for this study. Students (n=63) in the advanced choirs of two of the schools were assigned to an experimental group while students (n=67) representing select choirs of two other schools were assigned to a control group.

Groups were pretested on pitch matching skills, knowledge of intonation concepts and self-reported attitudes toward abilities to discriminate pitch and sing in tune. The experimental treatment (five minute choral warm-ups) was applied over a seven-week (20 session) period. Following treatment, groups' pitch-matching skills, knowledge, and attitudes were posttested, for subsequent comparison.

Pretest pitch matching scores (mean cents) indicated no statistically significant differences between experimental and control groups (t= -1.75, df=128, p >.05). A statistically significant difference was found between posttest pitch matching scores with the experimental group exhibiting more accurate pitch matching skills than the control group (t= -2.26, df=128, p <.05). An analysis of group pretest to posttest pitch matching scores revealed no statistically significant differences, although the experimental group progressed slightly (n= -4.40 cents), while the control group regressed in pitch-matching skills (n= +6.89 cents).

Analysis of the knowledge evaluations revealed statistically significant differences in pretest-posttest gain scores for both groups. Experimental group subjects possessed statistically significantly more knowledge about concepts related to intonation and vocal pedagogy after treatment than the control group (t= 2.38, df= 128, p <.05).

Comparisons of group attitude posttest results indicated statistically significant differences as experimental group attitudes toward warm-ups and self-reported singing skills became more positive (t= -2.46, df=62, p <.05) while control group attitudes became slightly more negative (t= .27, df =66, p >.05).

PERSONALITY CHARACTERISTICS OF MUSIC EDUCATORS AND PERFORMERS AS MEASURED BY THE MYERS-BRIGGS TYPE INDICATOR AND THE BEM SEX-ROLE INVENTORY

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Abstract

Purpose. This study was designed to examine and compare characteristics of music educators' and music performers' personalities.

Procedures. Personality type, as measured by the Myers-Briggs Type Indicator (MBTI), and psychological androgyny, as determined by the Bem Sex-Role Inventory (BSRI), were the personality characteristics evaluated in an effort to learn more about musicians who had selected either music education or music performance as careers. The music educator sample (MES, *N*=56) and the music performer sample (MPS, *N*=56) each consisted of graduate students enrolled in prominent university schools of music.

Findings. Comparisons of the MES and MPS indicated that there were no significant differences between the groups for each of the four MBTI dimensions (i.e., Extraversion-Introversion, Sensing-Intuiting, Thinking-Feeling, and Judging-Perceiving). For both samples, the modal-type ENFP and the proto-type ENFJ were found. When the psychological classifications on the BSRI (i.e., androgynous, masculine, feminine, or undifferentiated), were compared for both samples, no significant differences were found. Androgyny was identified as the modal psychological characteristic of both music educators and performers. Physiological gender was found to be a significant factor *only* among females in the MES and *only* for the BSRI classification of androgyny.

Conclusions. Results of this study indicate that musicians who are educators and musicians who are performers may be more alike than different with regard to personality type and psychological androgyny. Although these individuals may choose to either teach or perform, music seems to be one common factor that may account for the similarities in the MBTI personality type preferences and for the BSRI classifications.

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MISSOURI JOURNAL OF RESEARCH IN MUSIC EDUCATION

Number 30

1993

Published by the
Missouri Music
Educators Association

MISSOURI JOURNAL OF RESEARCH IN MUSIC EDUCATION

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Published by the Missouri Music Educators Association

Number 30 1993

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PREFACE

The *Missouri Journal of Research in Music Education*, published by the Missouri Music Educators Association, is devoted to the needs and interests of teachers of music in Missouri and the nation. This issue is the thirtieth.

The members of the editorial committee are grateful to those readers who have written suggestions concerning the content of past issues and request that comments and suggestions again be sent to the editor concerning the content of this issue. We strive for a reasonable balance among music theory, history, philosophy, aesthetics, and pedagogy.

We express our deep gratitude to the Missouri Music Educators Association for their financial support to make it possible to continue to publish the *Missouri Journal of Research in Music Education*.

The Editorial Board

The *Missouri Journal of Research in Music Education* (ISSN 0085-350X) is published annually by the Missouri Music Educators Association. Copies can be obtained by sending $2.00 (cash, check, or money order, payable to Missouri Music Educators Association) to the editor. Inquiries relating to the availability and cost of back issues should be directed to the editor.

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A COMPARISON OF MUSICAL PERFORMANCE ACCURACY BETWEEN TEACHER TAUGHT AND PEER-TAUGHT KINDERGARTEN AND FIRST GRADE STUDENTS

Carol A. Prickett Merilyn Jones
The University of Alabama

The effects of peer and cross-age tutoring with children and adolescents have been explored with promising results (Topping, 1988). Reviewers of the literature in this area have reported that tutoring consistently benefits the children being tutored, although the critical variables are only beginning to be identified (Alexander & Dorow, 1983; Blackbourn & Campbell, 1991; Bierne-Smith, 1991; Brachfeld-Child & Schiavo, 1990; Cooper, Marquis, & Edward, 1986; Devin-Sheehan, Feldman, & Allen, 1976; Ehly & Larsen, 1980; Madsen, Smith, & Freeman, 1988; McGee, Kauffman, & Nussen, 1977; Prickett, 1987). In addition, researchers have frequently shown that the tutor's performance in the area being tutored improved also (Dinneen, Clark, & Risley, 1977; Greer & Polirstok, 1982; Yogev & Ronen, 1982).

The majority of published studies in peer or cross-age tutoring investigate these techniques with special education populations (Byrd, 1990; Madsen, et al., 1988; Scruggs, Mastropieri, & Richter, 1985; Scruggs & Osguthorpe, 1986; Scruggs & Richter, 1985). Almost all studies involve students 8 years old or older, although Brachfield-Child and Schiavo (1990) investigated the influence friendship has in normal preschool and kindergarten peer tutoring situations. At this age, friends showed greater involvement with their partners, more emotional expression, and a higher degree of competitiveness than did acquaintances. Their work confirmed the findings of Damon (1984) that a strong positive relationship between tutor and tutee enhances learning.

Music has been used to facilitate cross-age tutoring with special education students (Madsen, et al., 1988), but studies involving peer or cross-age tutoring for musical subject matter or skills with normal populations are quite limited (Alexander & Dorow, 1983). Prickett (1985) found peer-tutoring to be an effective method for second grade and older children to learn to play a simple song on the autoharp, but results were inconclusive for kindergartners and first graders, primarily because their digital strength and facility were not sufficiently developed to allow them to manipulate the instrument successfully.

Peer tutoring is not the usual format for teaching music skills in elementary schools, although much informal musical learning probably occurs in this way. This study investigated the effect of peer teaching by very young children on musical performance, specifically using an accessible instrument such as the Omnichord, and on a generalized musical task. It was hypothesized that there would be no difference in the accuracy of the performance of peer-taught and teacher-taught children.

Method

Subjects

Children from a public elementary school, 24 kindergartners and 22 first graders, were selected by their classroom teachers for participation in the study. The teachers were told that neither academic ability, musical ability, nor musical training were prerequisites for participation. Most of the kindergartners were nonreaders, and at least two children are graduates of a preschool program for special needs children. Genders were almost equally represented, with 24 boys and 22 girls completing the study.

Classroom teachers provided unalphabetized lists of the participating children which were divided into two teaching conditions by assigning alternating names in each grade to one or the other condition. No attempt was made to assign students as future tutors based on any criteria, and friendship variables were left to chance, although all pairs were classmates.

Materials, Equipment, and Preparation

An Omnichord was used for each music lesson. The letter names of the chords were visible on the instrument; additionally, the chord button for C Major was color coded with a red sticker, and chord button for G^7 was coded with a yellow one.

The words for each song were printed in large letters on individual sheets of 8 1/2" x 11" paper. Since students' reading skills were rudimentary at best, above the words accompanied by the C chord were red blocks indicating each C strum, while yellow blocks designated that the G^7 would be strummed. The four introductory strums were not indicated graphically on the sheet. Song sheets were laminated.

Instruction and performance took place in small, quiet, private conference rooms near the students' own classrooms. Each child stood before an Omnichord which was set on a low table with the song sheet propped just above the instrument. The adult music teacher sat to the child's right. Audio tape recorders were used to record sessions. Each session was completed in under 10 minutes.

The two adult music teachers who conducted the sessions hold graduate degrees in music education and have taught in a variety of situations. They used identical scripts for sessions, and they taped and listened to a practice session to ensure consistent and identical presentations, including vocal inflections and reinforcement patterns. These music teachers are not part of the elementary school's faculty and were unknown to the children, as the children were unknown to them.

Procedure: Instruction and Performance

Teacher-taught students. Each child was brought individually to the designated room for a music lesson. The music teacher showed the child the song sheet, said, "We're going to sing this song that I bet you already know, 'Row, Row, Row Your Boat'," and taking the child's hand, asked him or her to point to the words and colors as they sang. Every child indicated recognition of the song and attempted to sing.

Then the teacher brought forward the Omnichord, told the instrument's name, called attention to the red and yellow buttons, demonstrated how she would push the red one and strum four times with her other hand, and asked the child to sing with her again. After this rendition, she asked the child a few review questions about when the two buttons were pushed and about strumming, then told him or her to try it. Coaching as little as possible, but pointing to the appropriate color blocks on the song sheet, the teacher gave the child two practice trials.

After the second trial, the tape recorder was turned on, the teacher announced, "Ladies and gentlemen! Presenting Jane Doe!", and with no further cues, each child attempted to strum four times and play the song, with the teacher singing softly and pointing to the blocks on the song sheet.

Peer-taught students. A day or two after 21 children, 10 from kindergarten and 11 from first grade, had completed their Omnichord lessons, the music teacher asked each one and a classmate who had been assigned to the peer-taught condition to accompany her to the music lesson room. On the way there, she told the child who had already been taught that he or she was going to show the classmate how to play the Omnichord. Once in the room, the teacher asked both children to sing "Row, Row, Row Your Boat" and to point with her to the color blocks. Then she played the Omnichord while they sang again, telling the tutor to pay close attention to how she played to remember how to do it.

At this point, the music teacher disengaged as much as possible from the lesson. Instructing the tutor to show the classmate how to play, the adult physically backed away a few feet and only intervened if the tutor's desire to demonstrate was resulting in the classmate's getting no chance to try the task alone. However, the music teacher sang softly throughout each trial. After the peer-taught classmate had completed two practice trials, the procedure for introducing and taping the final performance was repeated just as it had been done for the teacher-taught students.

Procedure: Generalization

A day or two after all children had received instruction either from the music teacher or a peer and had been taped performing "Row, Row, Row Your Boat," each peer-taught child returned individually to the music room to play the song again. No further instruction was given. Since most tutors played the Omnichord themselves as a part of their teaching, this extra chance was given for peer-taught children to equalize the amount of experience with the instrument each child received before attempting the generalization task. This session was not taped.

For generalization, the room was arranged as it had been for all the sessions. Each child was told that there would be a chance to try something new. He or she was shown a song sheet and told that this song was different from the other. The music teacher began to sing "Are You Sleeping?", and the majority of children began to sing along, although a few said they had not heard it before. Regardless of its familiarity, the music teacher then said, "What are you going to do when you see the red block?" The student answered. The same question and answer were given about the yellow block. "What do you do with your other hand?" was asked and answered. Holding up four fingers, the teacher asked "How many times do you strum before you begin?" No other coaching was given. After one trial, the performance was taped.

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Results

The song sheets graphically depicted 16 possible chords for each song, 14 of which were C (red), and 2 of which were G^7 (yellow). Although the song sheet and the music teacher's demonstration emphasized a 16 chord version of "Are You Sleeping?", a number of students subdivided the beat. For these children's performances, only the accuracy of the chords occurring on the demonstrated strong beats was assessed. Data were analyzed and, after a lengthy interval, reanalyzed to check reliability. Results were consistent in all cases.

For the initial song, "Row, Row, Row Your Boat", the correct chord responses of the peer-taught students ($M = 14.04$) were higher than those of the teacher-taught students ($M = 13.52$), but they did not differ significantly, $t(44) = 1.079$, $p > .05$. The same was true for correct chord responses on the generalization song; peer-taught children ($M = 15.12$) were more accurate than teacher-taught ones ($M = 14.47$), but not significantly so, $t(44) = 1.5238$, $p > .05$.

A comparison was made of the correct chord responses on the initial song versus those on the generalization task. Peer-taught students' average scores on the generalization task ($M = 15.12$) were significantly higher than their scores on the initial song ($M = 14.04$), $t(24) = 6.3903$, $p < .001$. However, teacher-taught students' scores on the generalization task ($M = 14.47$) did not differ significantly from their scores on the initial song ($M = 13.52$), $t(20) = 1.8231$, $p > .05$. Across both conditions, half the students ($n = 23$) received perfect scores of 16 on the generalization task; 15 of these 23 were peer-taught children.

Teacher-taught students remembered to give four initial strums 90.4% of the time on the original song and 95.2% of the time on the generalization song, while peer-taught youngsters' strumming scores were 80% and 92%, respectively. In all conditions, first-graders performed slightly better than kindergartners, but the difference was significant only when peers were being taught the initial song, $t(23) = 3.82$, $p < .001$.

Discussion

This study investigated the effect of peer teaching by very young children on musical performance accuracy when playing an accessible instrument, and on a generalized musical task. The results indicate that under highly structured circumstances, small children can be as effective in teaching their peers a straightforward musical task as an experienced adult music teacher.

In formulating implications for elementary music instruction, a number of considerations should be borne in mind. The musical task was a simple one, the chord changes were minimal, and rhythmic challenges were reduced because the teacher sang at the tempo the child set. More complex musical tasks might field different results. Also, the presence of the adult music teacher undoubtedly focused the children's attention, decreasing the probability of off task behavior or of instrument destruction. Unsupervised peer teaching might well be less productive. Additionally, the adult's singing may have helped structure the experience for those children whose singing was nonmelodic. Without at least some form of melodic supplement, live or taped, the results might have been different. Finally, the Omnichord's ease in playing was an indispensable component, since earlier work (Prickett, 1985) has shown that conclusions cannot be drawn about young children's performance when an instrument is difficult for them to manipulate.

On the other hand, it seems clear that under some conditions children's opportunities to make and explore music may be expanded by incorporating peer teaching. Students were able to perform with a rather high degree of accuracy after only two trials on the initial song; following either an experience as a tutor, which usually included playing the instrument another time, or an additional practice trial on the initial song, their performance after one trial on the generalization task was in many cases even better. Peer-taught children performed as well or better than the teacher-taught students, who served as their tutors, in every aspect of the study, a finding which contradicts several studies (Dineen, Clar, & Risley, 1977; Greer & Polirstok, 1982; Yogev & Ronen, 1982). In contrast to most published studies using peer teaching, the tutors in this investigation were not selected because of their mastery of the musical material, although the peers they tutored tended to perform as well or better than they themselves did.

While it is possible that some pairs consisted of close friends, the random nature of the assignment to pairs mitigates against concluding that friendship may have been an influential factor in the success of the peer-taught players. No one openly expressed reluctance to work with the child with whom he or she was paired. Informal observation by the music teachers and classroom teachers concluded that the students regarded the music lessons as being fun. On two occasions mothers, who happened to be in the school during the lessons, came to the music room to observe because their children had reported that they were having fun learning to play a musical instrument.

The performance of children who had previously been identified as special needs children was not noticeably different. Indeed, this identification was not made known to the researchers until after the data had been analyzed.

In kindergarten and elementary settings where the chance to play musical instruments or to expand repertoire is limited due to constraints on music teachers' time, peer teaching in a highly structured and supervised setting could offer children increased opportunities to experience music making. A music teacher or a skilled elementary classroom teacher could set up the task, instruct a few students, and then allow those students to teach their peers, as long as the musical instrument is playable by the children (Prickett, 1985). Since there appears to be no musical prerequisite for successful tutoring, all students in a class could serve as tutors at one time or another.

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A COMPARISON OF KNOWLEDGE OF CHILDREN'S SONGS AMONG OLDER ADULTS, COLLEGE STUDENTS AND CHILDREN

Janice N. Killian
Texas Woman's University

Song selection has been an issue of continuing concern for music educators and therapists. Recent researchers (Jonas, 1991; Smith, 1991) have emphasized the necessity of determining geriatric music preferences and knowledge of familiar songs in order to facilitate therapy with these populations. Research has demonstrated that the elderly prefer songs which are from their past (Gilbert and Beal, 1982; Prickett and Moore, 1991). Such long familiar songs have been used to stimulate reminiscence of nursing home residents (Wylie, 1990), and as memory aids for Alzheimer's patients (Prickett and Moore, 1991; Lipe, 1991).

Likewise, song selection is considered of primary importance to the musical development of children. Teachers of severely handicapped children judged student ability to sing familiar songs to be the single most important musical goal for that population (Jellison and Wolfe, 1987). Elementary classroom teachers concurred by ranking "selecting appropriate songs" second in importance only to "using music to supplement other curricular areas" relative to information they most needed about music (Saunders and Baker, 1991). Whitlock and Ramsey (1993) thought the topic so important that they surveyed elementary music teachers across Texas, compiling a list of "what songs Texas students ought to know."

When exploring the accepted importance of song selection among education professionals, several unanswered questions arise. Is there agreement about which songs should be learned? Is there a body of song literature that is known throughout our culture? Are there songs that "everyone" seem to know, regardless of age? If so, and if these are songs that children typically learn during the elementary school years, these might become a core of songs that should be learned by both music education and elementary education majors (with their limited time to devote to learning songs), by music therapists working with geriatric populations (with their need to quickly assess which songs might be familiar to elderly clients), and by mentally handicapped children (with their limited abilities to learn large numbers of songs).

Therefore the present investigation was designed to examine consistency in knowledge of songs across various age groups. For the purposes of this study, "knowing" was defined as being able to recall a song title. No effort was made to determine if subjects knew the words or the tune of the song, nor if they recognized the song when they heard it. Since everyone (children through adults) conceivably might have had the opportunity to learn songs as a child, the study was limited to consideration of children's songs in order to include populations with as wide an age spectrum as possible.

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Method

Subjects ($N = 107$) consisted of three age groups: 1) older adults ($n = 30$) defined as non-institutionalized retirees over the age of 60 residing in suburban California or rural South Dakota;* 2) college students ($n = 41$) enrolled in "elements of music" courses required of special education and elementary education majors in a southwestern university; and, 3) children ages 7-9 ($n = 36$) defined as students in third grade music classes taught by a music specialist in a suburban Dallas, Texas public school.

Subjects were chosen to encompass as wide an age range as possible, yet have sufficient memory or experience to respond fully to the question; thus non-institutionalized retirees rather than nursing home residents were chosen. Children ages 7-9 were selected since they were regarded as being old enough to know and remember many children's songs, but not so old as to be strongly influenced by popular music (LeBlanc, 1991). Cultural differences, musical experiences, or musical preferences were not controlled in this study, but were assumed to be randomly distributed across subjects. Likewise, for purposes of this preliminary study, no effort was made to control for subject gender, ethnicity, geographical region, religious affiliation, or handicapping condition. Thus age was the only factor explored in this study.

All adult subjects (older adults and college students) individually were asked to respond in writing to the following question:

> Please name as many children's songs as you can. Include any songs that a child younger than 10 years old might sing. Don't limit your ideas. These songs might include nursery rhymes, church songs, holiday or Christmas songs, songs you learned in school, songs from TV or from anywhere else. If you can't think of the exact name of the song, write a partial name or list some of the words to the song. Just jot down every song or part of a song you think that a child might sing.

Since a pilot study indicated that writing names of songs legibly might be a difficult task for youngsters, children were asked to verbalize their list of songs while the experimenter wrote down the names. Their teacher told them to be thinking of all the songs they knew. Then individually they came to a private room near their classroom, where they spoke their answers to the experimenter. After their initial responses, each child verbally was given the same cues as the adult subjects read: Do you know any nursery rhymes? Church songs? Holiday or Christmas songs? Songs from TV or radio? Songs you learned in school? When the children indicated they had listed all the songs they could think of, they were given their choice of brightly colored pencils for "knowing so many songs." Children were also told that if they thought of some more songs, they could write down the names and give them to their teacher to give to the researcher. Several students elected to do this.

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* The author would like to thank Selmer and Grances Nelson of Winner, South Dakota for their assistance in collecting data among the older adult populations.

Results

Resulting data consisted of the frequency with which specific songs were mentioned by the three groups (older adults, college students, children). Descriptive data consisted of: the total number of songs chosen, the number of different songs chosen, the frequency with which songs were chosen, and the consistency with which specific songs were chosen by the three groups. Additional information consisted of the type of songs mentioned. Because of the frequency level of these data, only non-parametric statistics were used.

Frequency counts of total number of songs listed indicated that 2281 songs were listed by the 107 respondents ($M = 21.32$, $SD = 15.87$). The number of songs listed per person ranged from 5-105. See Table 1 for listings by age group. Chi-square analysis of the average number of songs selected by the three groups indicated that college students listed significantly more songs than did older adults or children ($X^2[2, N = 107] = 7.10$, $p < .05$).

Table 1

Number of Songs Listed By Age Group

	Range Of Songs Listed	Total Songs Listed	*n*	*M*	*SD*	Different Songs Listed	Different Songs Listed More Than Once
Older Adults	5-52	463	30	15.4	9.9	241	89 (37%)
Children	8-40	407	36	11.3	7.3	172	49 (28%)
College	13-105	1411*	41	34.4	18.1	296*	158 (53%)*
Total	5-105	2281	107	21.3	15.9	709	296 (42%)

* Indicates significant differences of at least $p < .05$

Further examination of Table 1 revealed that 709 different songs were listed, with 296 different songs being mentioned more than once. To lessen the effect of a single subject's opinion, all further consideration was limited to those songs mentioned by more than one person. Examination of the percentage of different songs mentioned per age group allowed comparison of the number of different songs chosen per group under unequal *n* conditions. Chi-square comparison of the percentage of songs chosen more than once across the three groups revealed that college students also chose significantly more different songs than did older adults or children ($X^2[2, N = 107] = 8.23$, $p < .02$).

Analysis of the types of songs listed was accomplished by noting the frequency with which songs could be classified into convenient categories. Categories included "Christmas," "sacred" (non-Christmas), "patriotic," "popular" (heard on TV, radio or recordings during the last three years) or "other." It should be noted that no "holiday songs" other than Christmas songs were mentioned by the populations surveyed. Musicians ($N = 2$) experienced with both popular and children's songs verified the assigning of songs to the above categories. Reliability (agreements / agreements + disagreements) averaged .97 (Patriotic = 1.00, Christmas = .99, Sacred = .93, Popular = .97, Other = .97).

Table 2

Percentage of Songs in Various Categories By Age Group

	Christmas	Sacred (Non-Christmas)	Patriotic	Popular	Other
Older Adults	06.2%	23.2%*	05.8%	00.4%	64.3%
Children	11.1%	08.1%	04.1%	29.1%*	47.7%
College	10.1%	08.8%	04.4%	02.7%	73.4%

* Indicates significant differences of a least $p < .05$.

Chi square analyses of the frequency with which the three groups chose songs from the above categories indicated that older adults mentioned sacred songs significantly more often $(X^2[2, N = 107] = 10.85, p < .01)$, choosing sacred songs 23% of the time while children and college students mentioned sacred songs 8% and 9% of the time respectively. Children mentioned popular songs significantly more often $(X^2[2, N = 107] = 46.31, p < .001)$. Twenty nine percent of the children's choices fell into the "popular" category, while only 3% of college students and 0.4% of older adults chose songs from this classification. No other comparisons were significantly different.

Of prominent interest were those songs which appeared consistently on the lists of all three age groups. Only 18 songs of the 709 different songs mentioned appeared more than once on all three lists. The 18 songs appear in Table 3. Of those songs, none are "popular", 1 is "sacred", 1 is "patriotic", 5 are "Christmas" songs, and 11 fall into the "other" category.

The Kendall Coefficient of Concordance (Siegel, 1956) was used to examine possible relationships among the three age groups' selection of the 18 consistently-named songs. Results indicated a positive correlation $(W[2, N = 18] = .5894)$. A subsequent significance test revealed a significant agreement among the three groups $(X^2[17, N = 18] = 30.06, p < .05)$. Such results imply that the three age groups were in agreement on their choice of these 18 songs, and that the ranking of the frequency with which they selected them was consistent.

Table 3 lists the 18 songs in order based on the ranks of the sums of the three groups' rankings. The total frequency with which each song was mentioned also appears. Note that sums of ranks do not necessarily correspond with the total frequency of mention per song title. Siegel (1956, p. 238) argues that a ranking of the sum of the ranks is the most accurate estimate of the " true" rankings of items in three groups, and a more accurate assessment than ranking total frequencies. Thus, considering all three lists combined, "Jingle Bells" was the favorite, followed by "Jesus Loves Me," "Twinkle Twinkle Little Star," and then "Mary Had a Little Lamb."

Table 3

Consistency of Song Mention:
Songs Mentioned by All Age Groups More Than Once

(In rank Order of Total Sums of Ranks)

1. Jingle Bells (frequency of mention = 72)
2. Jesus Loves Me (54)
3. Twinkle Twinkle Little Star (48)
4. Mary Had a Little Lamb (48)
5. America (34)
6. Silent Night (34)
7. Old MacDonald Had a Farm (37)
8. Row Row Row Your Boat (40)
9. Rudolph the Red Nosed Reindeer (39)
10. O Susanna (24)
11. Santa Claus is Coming to Town (23)
12. Three Blind Mice (29)
13. Rock a Bye Baby (23)
14. London Bridge is Falling Down (27)
15. Yankee Doodle (21)
16. You are My Sunshine (10)
17. Farmer in the Dell (18)
18. O Christmas Tree/O Tannenbaum (10)

Further examination of agreements among song choices between any two groups indicated that 23 additional songs appeared more than once on both the college students and older adult lists; 18 additional songs appeared on both the college students and the children lists, while only one additional song appeared more than once on both the older adult and the children list. These songs are listed in Table 4. Chi-square analysis of the frequency of agreements across the three groups indicated that college students and retirees, and college students and children agreed significantly more often than did retirees and children ($X^2(2, N = 96) = 8.31, p < .02$).

Because the specific songs chosen by individual groups might be of interest to educators or therapists working exclusively with one age group, Table 5 lists the top ten songs chosen by each age group by frequency of mention. No further analyses were performed on these data.

Results may be summarized as follows:

1. Subjects listed a total of 2281 songs, of which 709 were different titles.
2. Eighteen songs were mentioned more than once by all three age groups.
3. College students listed significantly more total songs and significantly more different titles than did older adults or children.
4. Older adults listed significantly more sacred songs, while children mentioned significantly more popular songs. There were no significant differences among groups on frequency of Christmas or patriotic songs mentioned.

Table 4

Additional Songs Appearing of Two Lists More Than Once

College Students and Older Adults

America the Beautiful
Are You Sleeping
Baa Baa Black Sheep
Camptown Races
Clementine
Coming Round the Mountain
Hark the Herald Angels Sing
I'm a Little Teapot
Jolly Old Saint Nicolas
Joy to the World
My Bonnie Lies Over the Ocean
O Little Town of Bethlehem
Old Gray Mare
Over the River and Through the Woods
Patty Cake
Ring Around the Rosie
Star Spangled Banner
Ten Little Indians
Three Little Fishies
Up on the Housetop
What a Friend We Have in Jesus

College Students and Children

B-I-N-G-O
Deep and Wide
Deck the Halls
Deep in the Heart of Texas
Happy Birthday
Here Comes Santa Claus
Itsy Bitsy Spider
Peanut Butter Song
Pop Goes the Weasel
Shoo Fly
Whistle While You Work

Older Adults and Children

Old Black Joe

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Table 5

Most Frequently Mentioned Song Titles: Separate Age Groups

Older Adults

1. Jesus Loves Me (frequency of mention = 17)
2. Silent Night (13)
3. America (11)
4. Jingle Bells (10)
4. Row Row Row Your Boat (10)
6. Three Blind Mice (9)
7. Away in a Manger (7)
8. Brighten the Corner Where You Are (6)
8. Over the River and Through the Woods (6)
8. Twinkle Twinkle Little Star (6)
8. O Little Town of Bethlehem (6)
12. O Susanna (5)
12. Santa Claus is Coming to Town (5)

College Students

1. Jingle Bells (frequency of mention = 33)
2. Jesus Loves Me (32)
2. Mary Had a Little Lamb (32)
4. Itsy Bitsy Spider (30)
4. Twinkle Twinkle Little Star (30)
6. Old MacDonald Had a Farm (27)
6. Ring Around the Rosie (27)
8. Row Row Row Your Boat (26)
8. Rudolph the Red Nosed Reindeer (26)
10. B-I-N-G-O (25)
11. This Old Man (24)
12. London Bridge is Falling Down (21)
13. Frosty the Snowman (20)
13. Rock a Bye Baby (20)

Children

1. Jingle Bells (frequency of mention = 29)
2. There Was a Bowlegged Sailor* (17)
3. You're a Grand Old Flag* (16)
4. Mary Had a Little Lamb (12)
4. Twinkle Twinkle Little Star (12)
6. Ida Red, Ida Blue* (11)
6. Rudolph the Red Nosed Reindeer (11)
8. Old Blue* (10)
9. O Susanna (7)
9. Old MacDonald Had a Farm (7)
11. Ice Ice Baby (Vanilla Ice) (6)
11. Santa Claus is Coming to Town (6)
13. America (5)
13. Can't Touch This (M.C. Hammer) (5)
13. Humpty Dumpty (5)
13. Itsy Bitsy Spider (5)
13. Jesus Loves Me (5)
13. Silent Night (5)
13. Willoughby* (5)

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* Indicates songs the children learned in school during the month the interviews were conducted.

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Discussion

The most interesting finding appears to be that out of 2281 songs, only 18 were mentioned more than once by all three age groups. Still it is valuable to know that for these subjects there was a consistency across age groups on these 18 songs. Perhaps there is a body of song literature which can be considered basic to our culture. Certainly these subjects agreed on these 18 titles.

Interpretation of the present findings and applications to other situations should be made with caution, however, due to the fact that the research was limited to children from a single elementary school, to college students from a single university, and to retirees from only two geographic areas. Thus results may be regional and may not necessarily be transferable to the general population. Likewise, no effort was made to control for religious or cultural differences, and thus results may or may not be generalizable to more diverse populations.

Nevertheless, these data do present some heretofore unavailable information about the agreement in knowledge of song titles across generational lines. Thus music educators and therapists might choose to use the cross-age familiarity of these songs as a starting point when dealing with the relevant populations. Educators might also consider making these songs a part of the curriculum that all children (especially those with limited abilities to learn songs) should learn. University instructors might consider requiring elementary education majors to know these 18 songs as a minimum requirement for a music-in-the-elementary-classroom course.

It was interesting that so many of the consistently-chosen songs (5 of the 18) fell into the "Christmas Song" category (see Table 3). Of course, "Do you know any holiday or Christmas songs?' was one of the prompts given each subject, but it should be remembered that data were collected during September so few environmental Christmas cues were present. The music of Christmas would appear to be a strong cross-age unifying factor for these subjects. Again, it should be remembered that although no effort was made to determine the religious background of any of these subjects, anyone who mentioned sacred songs, seemed to choose songs from the Christian tradition. Further research might want to explore the song-learning experience for non-Christian subjects, particularly as it relates to music choices in public school settings (Kuhn & James, 1993).

It was intriguing that these young children chose currently popular titles so frequently. (See Table 5 for a list of the most frequently mentioned titles by age group.) Even among these 7-9 year-olds, popular rap songs ("Ice Ice Baby" and "Can't Touch This") appeared as their eleventh and thirteenth most frequent choices. These selections may have been affected by exposure to TV/radio, or may have been the result of a current cartoon show (Hammerman) which featured the performers of these titles. A probable conclusion might be that "rap" style music is now part of the mainstream of our culture, even for these relatively young subjects who are usually not as affected by popular music culture as older students (LeBlanc, 1991).

College students appeared able to list many children's songs (see Table 1). Children, however, exhibited some difficulty in naming songs. Not surprisingly, most mentioned songs which they were currently learning in music class (see Table 5). Many verbalized that they knew a lot of songs but that it was hard to think of them right away, even when given a series of memory prompts such as "Do you know any songs from TV?" Older adults expressed the same problem, but approached the task with a great deal of enjoyment. Many spoke of how much they liked remembering the old songs.

It should be remembered that "knowing," for the purposes of this study, was limited to the ability to recall a song title. Perhaps further research may want to address whether "knowledge of songs" can be measured effectively by simply asking subjects to name song titles. Although verbal or written report is one of the most frequently used measures of musical response (LeBlanc, 1984), research indicates that what subjects say and what they do are not necessarily highly correlated (Geringer, 1983). The fact that 18 titles did appear consistently on all lists, however, indicates that these eighteen tunes were available in the memory of many subjects regardless of age. There may be additional songs which are very familiar to subjects if they could hear them performed rather than merely listing their names. Further differences might occur if subjects were asked to sing or hum the songs they said they knew (Killian, 1993). Indeed, several subjects were observed humming the tunes as they tried to remember titles. Others hesitated to participate in the study until they were told that they only had to list titles, not sing them for the experimenter. Thus how the term "knowledge of song" is defined (listing names of songs vs. recognition of song titles vs. ability to perform the song) might dramatically affect the results and be a fruitful area for future research.

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INSTRUMENTAL STUDENT MOTIVATION: AN EXPLORATORY STUDY

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Understanding student motivation has long been a concern for researchers and educators. Numerous theories of motivation have been developed in an attempt to increase student involvement and interest in learning. Research has identified intrinsic and extrinsic factors that affect student motivation.

Newby (1991) observed four basic categories of motivational strategies used by 30 first-year elementary school teachers and their effects on student on-task behavior. The four categories of strategies were: attention-focus, relevance, confidence-building, and satisfaction. Attention-focus strategies were those that aimed at getting and maintaining students' attention. Relevance strategies included those that helped students relate the task to their personal experiences. Confidence-building strategies helped students accomplish challenging but achievable goals. Satisfaction strategies were those based on extrinsic rewards. Results from the study indicated a significant positive correlation between student on-task behavior and teacher use of relevance strategies.

Pintrich and De Groot (1990) examined the relationships between three different motivational components (*i.e.*, expectancy component; value component; affective component), three types of self-regulated learning components (*i.e.*, students' metacognitive strategies, students' self-management and control of effort, and the actual cognitive strategies that students use to comprehend the material), and student performance on classroom academic tasks. Results from this study showed that intrinsic value was not significantly related to student performance but was strongly related to student use of cognitive strategies and self-regulation. Students who were motivated to learn and perceived their academic task as important and interesting were more cognitively engaged in learning and more likely to be self-regulating and persistent.

The importance of students' self-motivation and positive self-control has been supported by other studies (McCombs, 1982; Roberson, 1987; Lowman, 1990). In the report of a five-year research program which aimed at modifying the learning strategies of military technical training students, McCombs concluded that the most important motivational component is the concept of positive self-control. In order to be able to take positive self-control, students need to develop strategies and skills such as active information processing strategies, self-management strategies, and self-reward strategies. McCombs believed that promoting positive self-control would lead to both learner satisfaction and motivation. Learner satisfaction and motivation would, in turn, contribute to improvement in performance.

Other student characteristics have been found to be related to motivation. Students' concern for security, home, and parents seems to affect the performance of high school bands (Caimi, 1981). The perceptions of success and failures of band members are related to motivation (Chandler, Chiarella, & Auria, 1987). Students' beliefs about the causes of their successes and failures have an effect on achievement (Asmus, 1986; 1990; Bar-Tal, 1978; Costa-Giomi, 1989; Weiner, 1984).

While many studies of motivation have focused on student characteristics, others have focused on teacher behaviors. It has been suggested that in order to help students maintain their interest in learning, teachers should provide more positive than negative feedback (Forsythe, 1975; Kuhn, 1975; Murray, 1975; Price, 1983). Lowman (1990) stated that teachers should avoid emphasizing their power over students and should help them to experience the inner satisfactions of learning and achieving. Goldberg (1990) suggested that instrumental teachers need to understand the thoughts, ideas, and learning processes of individual students in order to promote a more effective and collaborative teaching-learning experience.

While existing studies consistently support the value of developing student motivation, little research has investigated the specific factors that affect the motivation of intrumental students. The purpose of this study was to identify factors which may influence students' motivation to play and practice their instruments. It also examined whether instrumental teachers, performance, and non-performance students agree about the relevance of these variables as motivating factors.

Method

Thirty-two instrumental students (18 performance majors and 14 non-performance majors) and 9 instrumental teachers at a large Canadian university participated in the study. Performance students had played their instruments for 6 to 24 years and non-performance students for 4 to 20 years.

A list of motivating factors was developed based upon suggestions from instrumental musicians and a review of related literature (Asmus, 1990; Caimi, 1981; Chandler, Chiarella, & Auria, 1988; Pintrich & De Groot, 1990). The list was further examined by two music professors and four graduate music students. The final version of the list included 14 student-related or teacher-related factors. Student-related factors were: (a) attendance at concerts and recitals; (b) participation in concerts, master classes, and contests; (c) music listening experiences related to student's repertoire; (d) parental expectations' (e) peer pressure; (f) self-expectations; (g) relationship with the teacher; (h) performance of a repertoire in which the student was interested. Teacher-related factors were: (a) enthusiasm for teaching; (b) willingness to accept students' opinions; (c) positive and encouraging attitude towards students; (d) high expectations of students; (e) concern for students' career development; and (f) confidence in their student success.

Subjects were asked to rate each factor according to its contribution to students' motivation to play and practice an instrument on a five-point Likert scale. A rating of "1" indicated that the factor had little effect on student motivation, whereas a rating of "5" indicated that the factor significantly motivated students. Additional questions in the students' form gathered information regarding their instrumental experience, major, and customary level of motivation to play and practice. The forms included a free-response section in which subjects could list other factors not included in the questionnaire.

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Results

In order to examine whether teachers, performance majors, and nonperformance majors differed in their responses to the questionnaire, a two-way ANOVA with repeated measures was performed for each of the two sets of ratings (*i.e.*, ratings for student-related and teacher-related factors). The results of both analyses indicated no significant differences in the ratings of the three groups of subjects. Significant differences were found among student-related factors (Table 1) and teacher-related factors (Table 2). No significant interactions between variables could be established.

Table 3 presents the mean ratings for each of the eight student-related factors. Tukey pair-wise comparisons showed that factor 4 (parental expectations) was rated significantly lower than all other factors. Factor 5 (peer pressure) was rated significantly lower than Factors 2 (participation in performances), 6 (self-expectations), 7 (relationship with teacher), and 8 (playing appealing repertoire). Factor 8 received a significantly higher rating than Factor 1 (attendance at concerts).

Table 1

ANOVA with repeated measures for Group on Student-related Factors (St. Factors)

Source	*df*	Sum of Squares	Mean Square	*F*	*p*
Group[a]	2	.98	.49	.19	.83
Error	38	99.85	2.63		
St. Factors	7	129.16	18.45	18.40	$<.01$
Group x St. Factors	14	14.11	1.01	1.01	.45
Error	266	266.77	1.01		

[a] Group: performance majors, nonperformance majors, and teachers.

Table 2

ANOVA with repeated measures for Group on Teacher-related Factors (Tch. Factors)

Source	*df*	Sum of Squares	Mean Square	*F*	*p*
Group[a]	2	.54	.27	.09	.91
Error	38	113.96	3.00		
Tch. Factors	5	18.38	3.68	8.45	<.01
Group x Tch. Factors	10	2.57	.26	.59	.82
Error	190	82.71	.44		

[a] Group: performance majors, nonperformance majors, and teachers.

Table 3

Mean ratings of student-related motivating factors

	Factor	*M*
1.	Attendance at concerts/recitals	3.60
2.	Participation in concerts/contests	4.09
3.	Music listening experiences related to repertoire	3.70
4.	Expectations from parents	2.16
5.	Peer pressure	3.26
6.	Self-expectations	4.14
7.	Warm, good relationship with teacher	4.05
8.	Performance of interesting repertoire	4.31

Table 4 lists the mean ratings of teacher related motivating factors. Results of Tukey pair-wise comparisons indicated that Factor 5 (teacher concern for student's career) was rated significantly lower than Factors 1 (teacher enthusiasm), 2 (teacher acceptance of student's opinions), and 3 (teacher positive and encouraging attitude). Factor 6 (teacher's confidence in student's success) was rated significantly lower than Factors 1 and 2.

Table 4

Mean ratings of teacher-related motivating factors

Factor		*M*
1.	Enthusiasm for teaching	4.39
2.	Willingness to accept students' opinion	4.14
3.	Positive/encouraging attitude toward students	4.40
4.	High expectation of students	3.98
5.	Concern for students' career development	3.60
6.	Confidence in student's success	3.86

Students participating in the study were asked to report how motivated they usually were to play and practice their instruments. Three levels of motivation were established: high, medium, and low. Because only one student reported having low motivation, the data from this student was excluded from further analyses. Two-way analyses of variance with repeated measures were conducted with motivation level (high and medium) as the independent variable and ratings for student-related factors and teacher-related factors as the dependent variables. Motivation level did not affect students' ratings of either set of motivating factors significantly. As in the previous analyses, significant differences among student-related factors ($F[7,203] = 13.03$, $p < .0001$) and teacher-related factors ($F[5,145] = 5.84$, $p < .0001$) were found. No significant interactions between variables could be established.

The free response section in the questionnaire gathered additional comments from instrumental teachers and students. Teachers believed that students' own involvement, love, and commitment to music, and students' enthusiasm for learning are the most important motivating factors. Instrumental students suggested additional factors that affect their motivation to play/practice their instruments: better practice facilities, listening to their own recordings, theoretical understanding of the music, teachers' ability to develop students' potential, reactions from the audience, and personal satisfaction and pleasure.

Discussion

In this study, instrumental teachers and advanced instrumental students agreed on what motivates and does not motivate students to play and practice their instruments. This finding is certainly positive, because it suggests that both teachers and students approach the sometimes problematic task of students' practice in a similar way. They both think that the most important teacher related motivating factors are the teacher's enthusiasm and encouraging attitude and the most relevant student-related motivating factors are performance of appealing repertoire, involvement in performances, and self-expectations. They also agree that parental, peer, and teacher's expectations contribute very little to the motivation of students to play and practice.

However, it should be noted that the student sample of the study was very selective as it included only advanced instrumental students. These students had the motivation to play and practice their instruments as demonstrated by their standing in a highly competitive music program at a major university and by their self reported motivational level. They probably had high professional expectations, opportunities to participate in performances and master classes, and the tools to play a vast repertoire. It seems natural that parental expectations or teacher concerns were considered minor motivating factors at this stage of their careers. Future research may investigate whether less advanced students agree with the importance of the factors reported in the present study.

Nevertheless, it seems that for instrumental students, opportunities to select repertoire they like and to participate in performances might increase their willingness to practice. Teachers should consider providing their students with these opportunities as much as possible. Even beginning instrumentalists might be capable of participating in class recitals and selecting a few pieces from those suggested by the teacher. Teachers should also be attentive to their attitude towards students, because their enthusiasm and encouragement seem to be strong motivating factors even for advanced students.

Students suggested other motivating factors they considered important to play and practice their instruments. They believed that their own theoretical understanding of music and teacher's ability to develop students' potentials contribute significantly to their motivation. These factors have certainly been considered as most important in music programs that strive for excellence in teaching and a well balanced curriculum.

Students also reported that it is important to have good practice facilities and opportunities to listen to their own recordings. These last two factors, which are usually out of the control of instrumental teachers, are often the concern of music school authorities and administrators. Although it might be difficult to provide students with optimal practice and accessible recording facilities, they should be considered important elements of an instrumental program.

Interestingly, both students and teachers suggested that the love for music and commitment to one's career are decisive motivational factors. It then seems necessary to find ways to develop these intrinsic motivational variables in those students who do not have them naturally. Future research might investigate this problem. As there is a growing interest in more efficient and purposeful teaching/learning experiences, the study of student motivation will remain an important concern of researchers and educators.

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TOWARD A BLACK AESTHETIC: THE EFFECT OF RACE ON PREFERENCE AND PERCEPTION OF SELECTED POPULAR MUSIC

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It is projected that by the year 2020 the African-American population, the largest minority population in the nation, will grow from 11.7% indicated by the 1980 census to as high as 15%. By that time it is estimated that African-American children will make up 20% of the school-aged population--one out of every five school children will be black (Jaynes & Williams, 1991). By the year 2000 minority children will account for 42% of all public school students in the United Stated (American Council on Education, 1988). As of 1980 the majority of public primary and secondary school students in over half of the 50 largest U.S. cities were African-American and Hispanic (American Council on Education, 1987).

Reimer (1970) wrote,

> A large body of music exists that can be regarded as unconnected to any particular place, any particular time, and particular ethnic group or any particular race. This is the important literature of Western art music, which is characterized by its universality, its timelessness, its 'color blindness.' (p. 145)

As the nation's classrooms become more and more culturally diverse such a focus on a particular musical tradition is giving way to a broader range of materials, methodologies and value systems. In a recent article, Reimer (1993) described this broadening scope:

> The peculiarly American cultural reality is precisely captured by...two musical needs--that we are a culture with a particular identification and also a culture with multitudinous identifications, each aspect requiring our respect, devotion, and loving protection. (p. 23)

One possible component of these "multitudinous identifications" has been referred to throughout the writings of many scholars of non-Western music--the existence of a fundamentally unique listening experience determined according to cultural background. Such a phenomenon could carry additional implications for the structure of school music programs as well as the development of teacher education curricula. Though many writers seem to assume the existence of this phenomenon, little quantitative research has been done to examine such a timely and critical issue. Investigating the nation's largest minority population, the purpose of this study is to quantitatively explore the issue of a black aesthetic through the analysis of preferences and perceptions demonstrated towards selected instrumental and vocal popular music.

Henry Pleasants, in his 1969 discourse on the apparent schism between popular and art music, identified the period beginning approximately at the turn of the twentieth century as an "African-American epoch" in music history (p. 90). If one accepts this as an accurate epitaph for the past almost one hundred years, one must consider various implications of such an interpretation of history.

It may be an oversimplification to state merely that the dominance of black performers and pervasive influence of African-American musical styles constitute the entire substance of a fundamental change in historical orientation. According to some writings, discussed hereafter, the black influence in the music of the twentieth century may go beyond the appearance of a large number of artists possessing a like ethnic background; it may also include a set of evaluative processes that may or may not be indigenous to African-American culture--a uniquely black aesthetic.

Though many historical, ethnomusicological, and anthropological studies have identified or alluded to the existence of a black aesthetic, little quantitative research has been conducted in this area. If the twentieth century is to stand as the beginning of an African-American epoch in music history, then exploration of this assumed aesthetic might offer consequential insight into many areas of social, cultural and artistic scholarship. Curtis was focusing on the educational aspect of such inquiry when he wrote that "by identifying attributes that are unique to the black aesthetic experience, music teachers can explore, understand, and become sensitive to the emotions embedded in the music" (p. 24).

Maultsby (1990) wrote that "black music tradition does not adhere to European-American aesthetic values." It is generally accepted that aesthetic response arises from the dynamic interaction between artist, art object, and perceiver. In the case of music this translates into performer (who may also be composer), composition (as it is performed) and listener. Previous research has indicated that this interaction may be culture-specific and that such cultural experiences influence musical perception (Lynch, Eilers, Oller, & Urbano, 1990). The notion that the black listener is employing an entirely different set of evaluative tools appears in numerous writings on African-American culture. Stephens (1986) believed "the significance that one attaches to cultural things can be rooted in ethnicity or be culturally determined" (p. 183). Maultsby (1990) stated that audience response is predicated on the creation and interpretation of songs "within the aesthetic boundaries framed by black people" (p. 194). Burnim (1985) said that "the music of any culture is bound by its own qualitative standards, such is the case with the music of Black people in the United States" (p. 156).

Other studies have pointed to African musical traditions as the source for this unique aesthetic perspective (Wilson, 1974). The role of art within a specific cultural context was discussed by Scott (1990) who wrote "music is no more international than other forms of cultural expression" (p. 399). Addressing African culture in particular Bebey (1975) stated, "In a musical environment whose constant purpose is to depict life, nature, or the supernatural, the musician wisely avoids using beauty as a criterion because no criterion could be more arbitrary" (p. 115). This distinction was applied to American musical style by Lundquist (1991) who said, "If jazz is examined through an African lens, a very different musical soundscape appears than that revealed through a European lens" (p. 29).

Technical dimensions of this unique aesthetic were discussed by Stephen (1986) who identified context, time, rhythm and form as four parameters of particular distinction in black music. Burnim (1985), in her study of gospel music, identified time, text and pitch as three basic components constituting a "structural network" for interpretation. Lundquist (1991) proposed that the culture-specific use of the basic musical elements must be examined within their environmental context as well as within the processes of performance (improvisation, interpretation), creation (inspiration, composition, improvisation) and listening (attending, analysis, reflection). Specific examples of this usage of musical elements by black musicians include altered instrument fingerings, unconventional embouchures, unique playing positions, muting and sound distortion (Maultsby, 1985).

Quantitative study in this area has been limited. Several studies have been conducted indicating trends in racial preference (Appleton, 1970/1971; Meadow, 1970/1971; Berlyne, 1977; Jaynes, McCullers, MacNeil, and Vafaie, 1985). Both Appleton and Meadows found that race is a significant factor in determining musical preference. Appleton described the difference between musical style preferences of white and black college students with black students preferring soul, jazz and black gospel. Jaynes, et al. found white, midwestern Dixieland performers to prefer Dixieland music while black New Orleans performers preferred the more black-oriented Uptown jazz music. A similar study involving college nonmusicians replicated these results.

In search of factors affecting preference, additional studies demonstrated the effect of same-group associations on preference responses (Hraba and Grant, 1970; May, 1985; Killian, 1990; McCrary, 1990/1991). Hraba and Grant found that both black and white children tended to prefer dolls identified as representing their own ethnic group. May found no significant difference in the musical preferences of first, second and third graders except in instances of examples featuring clear racial associations, in which case significant same-race preferences were shown. Killian found that junior high students tended to prefer same-race musical models. Black students tended to choose black models while white students were more apt to choose both white and black models. McCrary found that the same tendencies were true of both middle-school and college students: Black students strongly preferred selections by black performers while white students showed an almost balanced preference distribution.

Hoard (1990) and Logan (1990) addressed perception by asking subjects to organize a collection of paintings according to style and subject-generated categories in the former study and according to artist in the latter. Results indicated that the race of both subject and artist had a significant effect on subject response. Interpretive capabilities of white and black students were examined by Brown and Schulze (1990) in the context of two Madonna music videos. Though Madonna's albums performed equally well on both white and black music industry charts, significant differences were found between the interpretation of the songs' stories with strong disagreement demonstrated over the most fundamental story elements.

Similar to McCrary (1990/1991), this study investigated preferences and perceptions expanded here to include both vocal and instrumental musical examples from the popular idiom. Black and non-black students' preferences for each example as well as perceptions of principal performers' race were recorded and examined.

Method

Subjects ($N = 289$) were undergraduates at three large southern universities representing all level classifications and various majors including music. Approximately half of the subjects (n = 144) were asked to respond according to preference for each of the musical examples while the remaining subjects (n = 145) were asked to respond according to their perceptions of the performer's race. In the case of vocal examples, this referred to the principal soloist.

The responses were then analyzed for relationships between the subjects' ethnicity and both preferences (black, $\underline{n}$ = 63; non-black, $\underline{n}$ = 81) and perception (black, $\underline{n}$ = 73, non-black, $\underline{n}$ = 72). Ethnicity was determined by subjects' response to a brief questionnaire included as part of the response form. Categories included Hispanic, African-American, Native American, Caucasian, Asian and Other. For the purposes of this study all subjects responding to categories other than African-American were considered non-black; this included 146 Caucasian subjects, 2 Hispanic subjects, 4 Native American subjects and 1 Asian subject. To de-emphasize a possibly apparent racial focus for students assigned to the preference task, the questionnaire also requested information regarding subjects' age, year in school, major and gender.

Two response forms, each including written directions, were used: the first tested preferences for each of the examples using a five-point Likert scale anchored by *like* and *dislike*; the second tested perceptions of performers' race using a five-point scale anchored by *most likely black* and *most likely not black*. Again to avoid preference bias arising from an obvious focus on racial issues subjects completed only *one* of the two randomly distributed forms though both test forms were administered simultaneously.

The stimulus tape consisted of twelve brief musical excerpts consisting of six vocal and six instrumental examples representative of various twentieth century popular music styles (Table 1). Instrumental selections were used in addition to vocal selections to minimize extra-musical cues possibly affecting preference. The twelve sections, though presented individually, were divided into six pairs matched according to style and idiom. Three of the pairs were performances of the same piece by different artists; the other three pairs were closely related in duration, tempo, instrumentation, and texture. Instrumental pairs included traditional jazz with featured soloist, big band, and fusion. Vocal pairs included jazz, rhythm and blues, and contemporary ballad styles. Excerpts included only complete musical units (e.g., phrases, verses, solos) and concluded at an identifiable cadence point or formal division. Within each pair corresponding segments of the selections were used resulting in slight variance in duration between examples, most notably in the pair representing vocal rhythm and blues. Selections were presented in one of two random orders.

Results

Separate scores were tabulated for perception and preference responses. Perception rankings were assigned numerical values ranging from 1, indicating the highest probability that the artist was black, to 5, indicating the highest probability that the artist was not black. Preference rankings were also scored using a five-point scale with 1 being most positive and 5 being least positive. To allow comparison of responses to performances by black and

Table 1. Musical examples

Title/Performer	Race/Style	Presentation	Duration
"Some of These Days" Louis Armstrong	(instrumental) black, trad. jazz	12,11	0:44
"Some of These Days" Bob Scobey	(instrumental) non-black, trad. jazz	5,8	0:38
"One O'Clock Jump" Count Basie	(instrumental) black, big band	4,5	1:08
"One O'Clock Jump" Glen Grey	(instrumental) non-black, big band	7,2	1:04
"Contusion" Stevie Wonder	(instrumental) black, fusion	9,12	1:10
"Sunwheel" Paul Winter Consort	(instrumental) non-black, fusion	2,7	1:14
"Blue Skies" Ella Fitzgerald	(vocal) black, jazz	10,6	0:44
"Easy to Love" Diane Schur	(vocal) non-black, jazz	11,3	0:55
"Good Rockin' Tonight" Wynonie Harris	(vocal) black, r & b	6,9	1:05
"Good Rockin' Tonight" Elvis Presley	(vocal) non-black, r & b	3,4	0:47
"For Sentimental Reasons" Natalie Cole	(vocal) black, ballad	1,10	0:55
"Spring Can Really Hang You Up the Most" Bette Midler	(vocal) non-black, ballad	8,1	0:58

non-black artists, each subject's response scores were separated accordingly and averaged to produce a mean score for examples by black performers and a mean score for examples by non-black performers. Each subject's scores were further separated by example type and averaged to produce a mean score for instrumental performances by black artists, a mean score for vocal performances by black artists, a mean score for instrumental performances by non-black artists and a mean score for vocal performances by non-black artists, a total of 6 mean scores per subject.

Two separate, random presentation orders were constructed to minimize the possibility of bias due to order of excerpt presentation. To test whether presentation order had a significant effect on subjects' responses, scores from each of the 12 examples were separated by task and subjects' ethnic group, then separated by order and averaged to produce four matched sets of scores--preference scores for black subjects, preference scores for non-black subjects, perception scores for black subjects and perception scores for non-black subjects. If subjects responded similarly to the examples regardless of placement on the stimulus tape, a strong relationship should exist between the scores for each order. Using the Spearman Rank Correlation Coefficient strong positive correlations were found between orders for black subjects' preference scores ($rho = .77$, $p < .05$), non-black subjects' preference scores ($rho = .75$, $p < .05$), black subjects' perception scores ($rho = .79$, $p < .05$), and non-black subjects' perception scores ($rho = .79$, $p = .05$). Both sets were subsequently combined for further analysis.

One purpose of this study was to compare perceptions and preferences of black ($n = 136$) and non-black ($n = 153$) subjects. These totals reflect the prior elimination of unusable survey forms ($n = 18$) including forms lacking information on each subject's ethnic background and forms with more than one answer for any example. Table 2 shows the mean scores and standard deviations for the subject and response categories.

Comparison of perception responses using Mann-Whitney $\underline{U}$ tests showed a significant difference between black and non-black subjects' identification of the performer's race for all examples by black artists ($z = -4.58$, $p < .001$) as well as all examples by non-black artists ($z = -2.59$, $p < .01$). For examples featuring black performers a significant difference was found in subjects' perceptions of instrumental performances ($z = -5.53$, $p < .001$) but not in perceptions of vocal performances ($z = -1.56$, $p > .05$). Conversely, for examples featuring non-black performers a difference was found in subjects' perceptions of vocal performances ($z = -2.45$, $p < .05$) but not in perceptions of instrumental performances ($z = -1.76$, $p > .05$).

A similar comparison of preference responses revealed a significant difference between subjects' preference for the examples by black performers ($z = -4.22$, $p < .001$) but no difference between preference for the examples by non-black performers ($z = -.02$, $p > .05$). For all examples featuring black performers significant differences were found between preference responses for both instrumental performances ($z = -4.47$, $p < .001$) and vocal performances ($z = -3.08$, $p < .01$). No difference was found between preference responses for vocal performances ($z = -.10$, $p > .05$ or instrumental performances ($z = -.09$, $p > .05$) for examples featuring non-black performers.

In addition to comparison of black subjects' responses with those of non-black subjects this study also sought to compare subjects' perceptions of

Table 2. Comparison of examples by black vs. non-black artists

Examples	Perception				Preference			
	Black subjects (n = 73)		Non-black subjects (n = 72)		Black subjects (n = 63)		Non-black subjects (n = 81)	
	M	SD	M	SD	M	SD	M	SD
All black	2.00	.52	2.40	.43	2.55	.72	3.13	.75
All non-black	3.08	.54	3.30	.47	2.91	.64	2.90	.70
Black vocal	1.88	.75	2.05	.69	2.42	.90	2.90	.86
Non-black vocal	3.51	.69	3.77	.61	3.00	.77	2.98	.81
Black instrumental	2.12	.65	2.75	.62	2.68	.81	3.35	.82
Non-black instrumental	2.64	.69	2.83	.64	2.82	.74	2.83	.81

Perception scale: 1 = Most likely black . . . 5 = Most likely not black

Preference scale: 1 = Like . . . 5 = Dislike and preferences for performances by black and non-black artists. Using Wilcoxon Matched-Pairs Signed-Ranks tests, analysis of black subjects' perception scores revealed a significant difference between responses to examples by black artists and responses to examples by non-black artists ($z = -7.19$, $p < .001$). This difference was also shown between vocal performances ($z = -7.06$, $p < .001$) and instrumental performances ($z = -4.38$, $p < .001$).

Perception scores of non-black subjects also showed a difference between performances by black and non-black artists ($z = -7.08$, $p < .001$). Within this category, however, the significant difference between perceptions of black and non-black artists' vocal performances ($z = -7.22$, $p < .001$) was not matched by perceptions of instrumental performances ($z = -.66$, $p > .05$).

A significant difference in black subjects' preference responses found for all musical examples ($z = -4.35$, $p < .001$) was not consistent within subgroups; the significant difference between responses to vocal performances ($z = -4.71$, $p < .001$) was not matched by responses to instrumental performances ($z = -1.70$, $p > .05$). Inconsistency was also found among non-black subjects' preference responses. Though a significant difference was found in responses for all examples ($z = -5.05$, $p < .001$), the difference between preference responses to instrumental performances ($z = -6.22$, $p < .001$) was not matched by responses in the vocal subgroup ($z = -.86$, $p > .05$).

Mean scores were calculated for each example according to group (black, non-black) and task (preference, perception) in order to compare rankings according to preference with perception scores. Spearman Rank Correlation Coefficients demonstrated a low positive correlation among perception and preference scores for non-black subjects ($rho = .17$) while scores for black subjects demonstrated a moderately high positive correlation ($rho = .72$). Within subgroups black subjects' scores demonstrated a moderate positive correlation for instrumental examples ($rho = .60$) and a moderately high positive correlation for vocal examples ($rho = .77$). Non-black subjects' scores also demonstrated a moderate positive correlation for instrumental examples ($rho = .61$) but a low positive correlation for vocal examples ($rho = .26$).

Discussion

The purpose of this study was to quantitatively examine perceptions and preferences of black and non-black subjects in an effort to shed light on the existence or nature of a unique black aesthetic. Though this phenomenon is often identified by historians, ethnomusicologists, sociologists and others, little quantitative research has been conducted to lend support or cast doubt on the topic.

When interpreting the obtained results it is essential to keep in mind the potential distinction between statistical significance and "real" significance. Apart from the most dramatic mean score differences, most mean scores were within one point on the scale with some pairs within one-quarter point. the meaning of such comparisons and resultant interpretations must be approached with caution.

The first aspect examined was perception, here measured by subjects' identification of performer's race after hearing brief musical excerpts. Mean scores of both ethnic groups indicated that, overall, not only were subjects able

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to distinguish between performances by black and non-black artists, they were able to distinguish correctly--a finding consistent with previous research (McCrary, 1990/1991). However, black subjects tended to rate all examples closer to the most likely black end of the perception scale while non-black subjects rated all examples closer to the most likely not black end of the scale.

Vocal performances by black artists were rated similarly by both groups, with non-black subjects tending to rate all vocal performances further toward the non-black anchor. Instrumental examples were rated similarly by non-black subjects regardless of performer's race although examples by black performers were rated slightly further toward the black end of the scale. Black subjects ranked instrumental performances by black artists significantly further toward the black end of the scale. It is interesting to note that despite differences in black and non-black subjects' perceptions of instrumental performances all mean scores for this category fell to the black side of the scale.

Subjects indicated preference response to the same musical examples by marking a five-point scale ranging from like to dislike. Black subjects' overall mean scores indicated a significant preference for performances by black artists, again consistent with previous research (McCrary, 1990/1991); conversely, overall scores of non-black subjects indicated a significant preference for performances by non-black artists. Mean scores for instrumental examples indicated that black subjects did not significantly prefer either performances by black or non-black artists while non-black subjects significantly preferred examples by non-black artists. For vocal examples black subjects' scores indicated a significant preference for performances by black artists while no significant difference was found in non-black subjects' scores.

It is interesting to note that with removal of overt racial cues in the form of identifiable vocal performances black subjects' stronger preference for musical examples by black performers statistically disappeared. This finding coupled with the higher correlation between black subjects' perception and preference responses compared to non-black subjects' responses, may support previous findings that black subjects tend to respond more positively to stimuli carrying apparent same-group associations (Hraba and Grant, 1970; May, 1985; Killian, 1990; McCrary, 1990/1991). This does not take into account differences in instrumental perception scores; since the performances used in this study were presented aurally this could suggest that elements within the music itself may have provided clues to the performer's race.

Results of this study do not in any way prove or disprove the existence of a black aesthetic. However, differences found between subject groups and across listening examples seem to indicate the value of further research. Clearly further research is needed to examine the relationship between perception and preference particularly as influenced by ethnicity. The near impossibility of controlling for all musical parameters within the context of listening examples such as those used in this study suggests the need for subsequent studies isolating individual musical elements such as rhythm, timbre, pitch and articulation.

Though many educators agree that the culturally diverse classroom brings with it special educational needs, it is still far from clear what those needs might be and how the teaching community can fill them. As music educators, one of our primary goals is to provide students with positive and stimulating musical encounters and experiences. The growing body of research into the possible relationships between ethnicity and musical preference and perception may provide insights into how these positive experiences might be related to or determined by cultural background and, in turn, direct us towards materials and practices that could allow us to maximize the learning experience for each of our students and broaden the learning experience for all of our students.

It is for others to argue the truth of Henry Pleasants' claim that the twentieth century marks an "African-American epoch" in music history. There can be no question, however, that African-American contributions have been a significant part of modern America's musical foundation. The suggestion of a particular black aesthetic cited so frequently in the writings of the past several decades certainly implies the possibility of a culture-specific listening experience across all ethnic groups. Further study should expand beyond comparison of black and non-black samples to include members of other cultures, each of whom makes a vital contribution to the diversity of the contemporary classroom.

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SUITABILITY OF A PERSONAL HEART RATE MONITOR FOR USE IN MUSIC RESEARCH

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There has been a long tradition of using the individual's physiological response as a dependent variable in music research. Physiological dependent variables have been especially prominent in music therapy, music preference, and performance anxiety investigations. Physiological measures, especially heart rate, could also be useful in monitoring progressive levels of physical exertion during practice and performance, with the instructor and the performer using these data in much the same way that the coach and the athlete observe them during training.

Kallman and Reuerstein (1977) describe a wide variety of physiological dependent variables. In practical effect, however, many of these dependent measures are beyond the reach of the typical music researcher. Some require large amounts of money for the researcher to buy and maintain the necessary equipment, some require the user to have a technical background in physiology and in electronic instrumentation, and some are invalid for use in certain kinds of music study by virtue of the way the subject is measured. An example of the latter problem would be that of measuring the palmar skin resistance of a pianist or a percussionist during performance. The part of the body needed as a measurement site would also be needed to perform the music.

Heart rate is one of the more popular physiological dependent variables in music research, as demonstrated by the comparatively large number of studies which have used it in the area of performance anxiety. A few examples would include Wardle's (1970, 1974) pioneering study in which the researcher used a telemetric physiograph to obtain heart rate, and recently completed dissertations by Tartalone (1992) and Brotons (1993, in press) in which the researchers used an updated version of the CIC Heartwatch (the Polar Vantage XL) to obtain heart rate.

Some of the studies we reviewed had used expensive and complex equipment to obtain heart rate data. In recent years comparatively simple and inexpensive equipment for measuring heart rate (similar to the cardiotachometer recommended by Brener, 1967) has appeared on the market in the form of the personal heart rate monitors developed by the personal fitness industry. We designed our study to learn if this kind of instrument might offer a way for music researchers with modest funding and limited technical background to collect heart rate data in music research.

The purpose of this study was to select and purchase a high quality heart rate monitor, conduct a field trial of this instrument in the context of music research, and report our results and advice for researchers who may want to use a heart rate monitor.

Method

We began this study in 1989 with an attempt to identify the best heart rate monitor among those that were then available. We sought the advice of professors and active researchers in physical education and exercise physiology, doctors specializing in sports medicine, trainers and coaches of university athletic teams, physical therapists, fitness counselors, athletes in several sports, both team and individually oriented, and owners of fitness centers and retail stores specializing in fitness equipment.

We studied articles which evaluated some of the available monitors (Delhagen & Burfoot, 1986, September), and which presented detailed information on the validity and reliability of these instruments (Leger & Thivierge, 1988). A monitor named the AMF Quantum XL had performed very well in these tests, demonstrating correlations of .95, .95, and .97 with a simultaneously recorded electrocardiogram (ECG) taken during step test, treadmill, and bicycle ergometer exercise, respectively (Leger & Thivierge, 1988, p. 146).

The AMF Quantum XL was highly recommended in each article, and its ability to accumulate readings in memory and store time-of-day and optional event markers in the same data file made it a strong candidate for research use. Prior to the beginning of our study, Computer Instruments Corporation acquired the Quantum XL from AMF and renamed it the CIC Uniq Heartwatch, Model 8799. It should be noted that this instrument is made in Finland by Polar Electro, and it is marketed under different names by distributors in different countries. Computer Instruments Corporations, 100 Madison Avenue, Hempstead, NY 11550 is the American distributor.

We bought two CIC Uniq Heartwatches, Model 8799, from an authorized dealer at the regular retail price of $369.00 each. Our instruments came from regular stock and were not select in any way. An interface and software capable of uploading accumulated data to either an IBM or Apple IIc personal computer were available for $499.00, but we elected not to buy this equipment because we wanted to evaluate the heartwatch as a low cost way of acquiring physiological data.

Description of the Heartwatch

The CIC Uniq Heartwatch is configured in three parts: (a) an adjustable and elasticized electrode strap which is worn around the chest in direct contact with the skin, (b) a battery powered transmitter unit which snaps onto the outer surface of the electrode strap, and (c) a battery powered receiver unit which is typically worn as a wristwatch. The instrument comes with a one-year warranty which covers the transmitter and receiver, but not the batteries or the electrode strap.

The heartwatch's electrodes sense the electrical signals generated by the heart in the same way as the equipment used to obtain an electrocardiogram. (To forestall any possible fear on the part of our subjects, we called the electrodes "sensors" in all verbal and written instructions that we provided to subjects in this study.) With its buckle engaged and its elastic pulled taut but not stretched, the electrode strap could be adjusted between a minimum circumference of 24 inches and a maximum of 32 inches. The stretch capability of the electrode straps we sampled was 20 inches of possible expansion beyond the base measurements shown above. A larger size strap is available by special order.

The transmitter unit, which is approximately 140 mm (5 1/2 inches) long, 30 mm (1 3/16 inches) wide, and 12 mm (1/2 inch) thick, broadcasts signals from the heart to the receiver. The receiver has built in functions to report current time of day and current heart rate, to set high and low heart rate limits and sound an alarm if the heart rate goes beyond these limits. The receiver can sample current heart rate and time of day at intervals of every 5 seconds, every 15 seconds, or every minute, and store this information in memory along with event markers which may be inserted at any time during recording. Heart rate may also be sampled and recorded in relation to elapsed time rather than time of day. This would be suitable when subject performance might appropriately be evaluated with a stopwatch.

The receiver will also function as a regular wrist watch which has an alarm feature. The receiver, which is approximately 50 mm (2 inches) long, 45 mm (1 3/4 inches) wide, and 16 mm (5/8 inch) thick, looks like a large athletic-style wrist watch and includes a CMOS 4 bit microcomputer. Figure 1 presents the three components of the CIC Uniq Heartwatch, Model 8799.

Immediately after buying our heartwatches we began using them to record our own heart rates under various levels of exertion. We also loaned the heartwatches to friends and asked for comments from the user's viewpoint. On the basis of this information we decided that our field trial should focus on three major tasks: (a) optimizing instructions for the participating subjects on how to correctly use the heartwatch, (b) identifying and meeting concerns of subjects who are also performing musicians, and (c) determining practical limitations of the heartwatch and recommending ways to work around these limitations.

Optimizing Instructions for Subjects

Our first step in optimizing instructions for subjects was to evaluate the comprehensive 19 page instruction manual that was supplied with the heartwatch. The manual was well printed on good quality paper and was illustrated with numerous photographs which were especially helpful in understanding the different functions of the instrument. The manual included the address of the American distributor, Computer Instruments Corporation, as well as a page of technical specifications.

In our own efforts to familiarize ourselves with the instrument, we noticed that it took a surprisingly long time to learn how to do comparatively simple tasks. It also took a long time to look up and confirm essential parts of programming sequences after we had already largely mastered them. We attributed this difficulty to three problems: (a) the instrument will do so many different things that providing instructions for every possibility makes the manual more complex than would be desirable, (b) the headings in the manual do not say in plain language what the heartwatch will do when placed in a specific program, and (c) the photographs in the manual are sometimes too small to provide optimum detail (as in the section on donning the heartwatch, pages 6-7). We found no incorrect information in the manual.

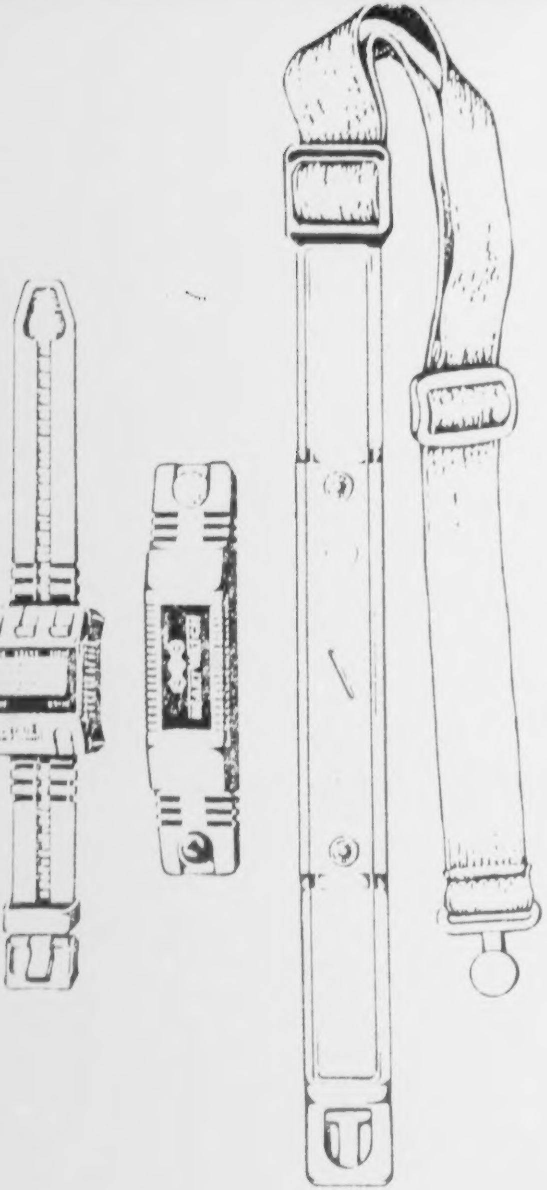

Figure 1. The CIC Uniq Heartwatch, Model 8799. Left to right: electrode strap, transmitter, receiver.

We checked our perceptions of possible difficulty with the manual when we began to loan our heartwatches to others. We got many requests to verbally summarize or demonstrate how to get the watch to do various things. We decided that it would be wise to prepare a simplified manual for the heartwatch, and that we could accomplish this best by simply restricting the number of heartwatch functions we described.

To develop a simplified manual, we first prepared a task analysis of all action needed to don the heartwatch, to get a reading of current heart rate, to store heart rate and time of day in memory, to insert an event marker into the stored data, and finally to recall the stored heart rate and time of day. Next, we photographed a volunteer subject while he was donning the heartwatch and selected the views we thought would be most helpful to those learning to use the instruments.

We brought these photographs, as well as illustrations from physiological measurement textbooks, to a professional graphic artist, who prepared drawings of generalized male and female subjects donning the heartwatch. These drawings were intended to insure that subjects apply the electrode strap to bare skin with sufficient elastic tension as required for optimum electrical contact, to inform female subjects that a typical brassiere would not interfere with the electrode strap, and to guide subjects in applying the electrode strap over that area of the chest most likely to give a strong electrical signal of the heartbeat.

We prepared simplified instructions on use of the heartwatch to accompany our drawings. They were based on the task analysis described above, and we brought the instructions through two cycles of trial and revision. We found we were able to fit the necessary information onto three typewritten pages including illustrations. A copy of our simplified instructions is available to interested researchers upon written request to the senior author.

Identifying Concerns of Subjects

In our own initial work with the heartwatch, we found that our main concerns focused upon putting the instrument on in a way that would optimize measurement while maintaining our own personal privacy. These concerns were echoed by the subjects who worked with us in our preliminary explorations of the instrument.

We felt that the ideal procedure for maintaining personal privacy would be for the subject to don the heartwatch alone in a private dressing room. Researchers could make the necessary arrangements for this if they could have confidence that the simplified instructions provided all the information needed to correctly don the heartwatch. No other issues emerged from preliminary exploration except a concern that the heartwatch might be a distraction or interfere with performance on particular instruments. We wanted to see how prevalent this concern was in a sample of subjects who had used the heartwatch, so we incorporated this concern into the field trial.

Determining Practical Limitations of the Heartwatch

We examined the practical limitations of our equipment in this study by posing the following questions:

1. Does the ambient temperature in which the heartwatch is stored influence its performance?
2. How necessary is it to wet the contact strips on the electrode strap before putting the strap on?
3. In a practical sense, how difficult is it to adjust the length of the electrode strap?
4. Does the standard electrode strap have a wide enough range of length adjustment to permit its use with children?
5. What is the acceptable range of tightness of the electrode strap which will still allow transmission of a reliable signal?
6. How high and how low on the chest may the electrode strap be worn and still generate a reliable signal?
7. Can the receiver operate reliably if not worn on the wrist? If so, what is the range of acceptable conditions?
8. Is the heartwatch susceptible to measurement artifact during data collection? If so, describe the problem(s).
9. Is the heartwatch susceptible to electromagnetic interference in typical music performing conditions? If so, describe the problem(s).
10. Without the computer interface, what is the best procedure for successful manual readout of accumulated data?
11. What is the typical life of the transmitter and receiver batteries under conditions of moderate use?
12. How difficult is it to obtain and replace the batteries in the transmitter and the receiver units?

We found that we were able to address most of these equipment concerns in the preliminary phase of our study, and we needed to design a specific test for only one of the above questions in our field trial.

Field trial data were obtained by having subjects complete a printed three-page questionnaire which was supplied to each subject together with a heartwatch and a copy of our simplified instructions for using the heartwatch. We worked with 51 volunteer subjects, 21 males and 30 females, whose ages ranged between 18 and 40 years, with a mean age of 25 years and a standard deviation of 5 years. Subjects were enrolled for undergraduate or graduate level music instruction in one of two universities located in the Midwestern and Northwestern United States.

Major instruments or performance media represented within our subject sample included cello, clarinet, flute, guitar, percussion, piano, saxophone, trombone, trumpet, violin, and voice. The piano was better represented than any other instrument in our sample accounting for 37% of the whole group. It was followed by voice with 14%, and by trumpet and flute with 12% each. The mean number of years of music instruction and of music performance experienced by our subjects was 14, with a standard deviation of 6. Subjects donned the heartwatch in private and wore their normal clothing over the heartwatch during the field trial. They filled out their own questionnaire, but one of us was available at all times to respond to questions.

Results

Instructions

New users tended to like our simplified instructions, but they became more comfortable with the published manual as they grew more experienced in the use of the heartwatch. We found no mistakes in the published manual, but offer the following suggestions to improve it: (a) warn users that the "mem bar" on the receiver display is very hard to see because of its location, and (b) include a trouble-shooting guide to help users trace and solve problems, including how to change both the transmitter unit and the receiver unit batteries, and how to know when the electrode strap should be replaced.

Subject Concerns

Subjects were very happy about the arrangement which permitted each person to don the heartwatch alone in a private room. We feel that this arrangement increased the number of volunteers. No subjects reported difficulty in correctly donning the heartwatch.

We received a number of complaints about the way it felt to wear the heartwatch. Subjects whose instruments require a more active use of the left hand complained about the bulk or weight of the receiver unit, and one person even complained about its visual appearance. One subject wrote "Since I am a pianist, anything I have on my hands or wrists affects me in some way. The heartwatch is big and awkward feeling on my arm. But what disturbed me the most was the constant 'clicking,' not exactly because the clicking never remained constant."

We found it interesting that none of the subjects who used the heartwatch in our preliminary explorations had commented about the clicking noise, and we ourselves had noticed it only for a brief period after putting the heartwatch on in a very quiet room. We only received two comments about the clicking, and both subjects reported that the sound was easy to ignore while performing.

Our subjects did not welcome the presence of the electrode strap and transmitter around their chests, but their complaints were generally mild. "The transmitter is comfortable enough to wear," wrote one subject. Another said "The pressure of the transmitter belt affects my breathing a little because of having asthma." It is notable that none of the subjects who wore the heartwatch in our preliminary explorations had complained about the electrode strap and transmitter. The great majority of these subjects had used the heartwatch over an extended period of time, compared to the single session of 20 to 30 minutes during which the field trial subjects used the heartwatch. We hypothesized that wearing the heartwatch becomes less intrusive to a user as the user gains experience with the heartwatch.

Our subjects observed and reported an unintentional biofeedback effect during their use of the heartwatch. One subject wrote "I was more nervous when I saw the heart rate reach 108 while performing." A number of subjects felt that immediate knowledge of their heart rate while performing would make them more likely to become anxious and would accelerate their heart rate further. This might begin a vicious circle of feedback and acceleration.

On our questionnaire, we included two questions asking subjects for their opinions after they had worn and used the heartwatch. One asked subjects to select a response expressing how much they thought it would disturb them to wear the heartwatch while performing music; another asked them how much they thought it would disturb them to wear the heartwatch while listening to music. Available response options were that it would (a) "greatly disturb me" (b) "definitely disturb me" (c) "somewhat disturb me" (d) "disturb me a little" and (e) "not disturb me at all."

In the music performance scenario, 57% stated that wearing the heartwatch would not disturb them at all, 26% said it would disturb them only a little, and only 4% said that wearing the heartwatch would greatly disturb them. The heartwatch was seen as even less of a disturbance in the music listening scenario, where 76% said that wearing the heartwatch would not disturb them at all, 18% said it would disturb them only a little, and no respondents said that wearing the heartwatch would greatly disturb them. With 78% of the subjects reporting that wearing the heartwatch would disturb them only a little or not at all while performing, based upon one experience with the heartwatch, we concluded that the heartwatch would probably be well received by subjects using it in music research.

In the case of music listening, 94% of the subjects reported that wearing the heartwatch would disturb them only a little or not at all. Whether the use of the heartwatch involved performance or listening, we believe that subject concerns would greatly diminish as the subjects acquired more experience with the heartwatch.

Heartwatch Limitations

During the preliminary phase of our study, we dealt with the question of the ambient temperature in the place where the heartwatch is stored. Normally, the heartwatch would be stored at room temperature, but it might encounter stressfully hot or cold temperatures while being transported to a research site or being locked in an automobile for safekeeping. The manufacturer states in the specifications (p. 19, manual) that the instrument will operate in temperatures between 23 and 113 degrees Fahrenheit (F).

We tested the instrument after storing it for several hours previous to the test in ambient temperatures which ranged from 15 to 100 degrees F. This test was not an unrealistic one because in every case the instrument was being kept in a locked automobile for safekeeping prior to it scheduled use.

Only the coldest temperatures caused a problem. We found that our heartwatches would not give heart rate readouts after being stored for several hours at temperatures colder than 35 degrees F. We assumed that the problem was in the transmitter and was probably its battery, because the unit would begin to function after the transmitter had been warmed by being strapped to the body in preparation for a measurement session. The colder the transmitter was allowed to become, the longer time it needed to warm to a temperature at which it would function. On one occasion when it had been kept at 20 degrees F, it required one half hour to become fully functional. It is probable that the sensitivity to cold is also influenced by the age and condition of the batteries. A lengthy unforeseen warmup period could be disrupting to a research study, so we recommend that the heartwatch always be kept at normal room temperature prior to its use.

We investigated the necessity of wetting the contact strips on the electrode strap before putting the strap on. The manufacturer's instructions (p. 7, manual) call for placing water on the electrode strips just before putting on the watch. We were concerned that subjects might use saliva instead of water if they did not have water available in their dressing room, and we wanted to learn if the instrument would work equally well without wetting the electrode strips.

We found that "dry" electrode strips would always work eventually, but that the way they worked was by becoming wet from the subject's eventual perspiration. Subjects will always perspire under the electrode strips because the strips are made of a rubbery material which does not permit moisture to pass through. In cool, dry weather, some subjects required fifteen minutes to perspire enough to wet the electrode strips. We recommend that a supply of clean water be placed in the dressing room to be used by the subjects. In our experience, properly wetted electrode strips always began to capture the heart's electrical signals immediately.

The amount of practical difficulty in adjusting the length of the electrode strap is largely a matter of opinion. No subjects complained specifically about adjusting the strap, but in our own use of the heartwatch we found that our first adjustment would sometimes have the opposite effect of what we had intended. We suspect that some subjects chose to work with the strap at its then-current setting rather than spend time working on an adjustment. We recommend that every subject try to adjust the strap to a length appropriate for his or her body. A strap that is too loose will give zero or inaccurate readings, while a strap that is too tight will cause discomfort for the subject.

We wanted to learn if the standard electrode strap had a wide enough range of length adjustment to permit its use with children. We did not work with subjects younger than 18 in this study, so we took the electrode strap to a professional seamstress who specialized in children's clothing. She stated that it would be easy to adapt the standard electrode strap for use by children, and that it would also be easy to replace the strap's elastic when this was needed because of wear and aging.

At the beginning of this study we had hoped to determine the acceptable range of tightness of the electrode strap which would still allow transmission of a reliable signal. The only practical way of measuring the strap's tightness was to measure the width of the gap between the two ends of the strap when it was placed at the correct height on the chest without stretching the belt (p., manual). The amount of tightness actually obtained using the recommended gap of six inches would be a function of the age and condition of the elastic on the strap, and we decided that it would do no good for us to investigate this because of the considerable variation that might be found with straps of different ages and histories of use. The heartwatch will respond with zero readings of heart rate when electrical contact with the body is broken, and a lack of zero readings suggests that the strap is adequately tight. Users should note that zero readings can also be caused by moving the receiver too far away from the transmitter.

We had hoped to determine how high and how low on the chest the electrode strap might be worn and still generate a reliable signal. It is helpful to first define the optimum location on the chest for placing the electrode strap. The manufacturer's instructions (p. 7, manual) say to locate the strap "just below the breasts" and they show a male wearer with the strap worn at the level that we judged to be approximately three inches below the nipples.

We consulted a respected textbook on physiological measurement and found illustrations which presented both the major surface landmarks of the chest and the areas of maximal signal intensity of the sound producing valves of the heart (Goldstein & Free, 1979, pp. 270, 272). It was evident that the electrode strips of the heartwatch were positioned to receive electrical information from the heart's mitral and tricuspid valves, and our job was to design a set of instructions which would consistently tell inexperienced users how to place the strap in the most optimum location.

We approached this task with both pictures and words. The most helpful body landmark was the lowest part of the sternum or breastbone, and we advised subjects to center the transmitter over this area about one inch below the nipples for males and immediately below the breasts for females. Our simplified instructions presented drawings of both male and female torso views of subjects wearing the electrode strap and transmitter at the optimum level.

With optimum placement of the electrode strap defined we were then ready to evaluate the result of departures from this placement. The typical contour of the female breast would tend to prevent female subjects from wearing the electrode strap any higher on the chest than directed, and when male subjects moved the electrode belt above the nipples the heart rate signal quickly faded. In actual practice, we found that there was a band of optimum height on the chest no more than three inches tall, centered on the lowest point of the sternum or breastbone and immediately above the xiphoid process. When the electrode strap is located here, it will pick up the most reliable signals.

We wanted to learn if the receiver would operate reliably if not worn on the wrist. In planning the study, we had foreseen that many performers would not want to wear the receiver on their wrists for reasons of aesthetics or for dislike of the comparatively large size of the receiver. As the study progressed, we also learned that the heartwatch could have an unintended biofeedback effect on performers who momentarily saw their heart rate while performing. The best way to prevent this would be to accumulate data with the receiver positioned where the subject could not see it.

It was necessary first to determine the practical limitations of the distance across which the transmitter would reliably send a signal to the receiver. For practical purposes, the manufacturer guaranteed a broadcast range of "arm's length," but we suspected that the actual range was longer than that. Working with an assistant, 31 subjects in the field trial measured the greatest distance in inches between the transmitter they were wearing and the receiver (which was held by the assistant) before the receiver stopped displaying a heart rate and reset the heart rate to zero. The mean distance at which the signal faded was 55 inches with a standard deviation of 3 inches.

This finding suggested that it would be possible to clip the receiver to a music stand being used by the subject or place it on a piano being played by the subject. The receiver should be turned so that the subject cannot see the receiver's face. The material from which a music stand is made did not seem to be a problem for the heartwatch. We were able to transmit a signal through the solid body of a metal music stand.

Our strongest recommendation, however, is that the receiver be placed in a pocket or pinned inside a jacket worn by the performer. This would take the receiver out of view of the subject, while still minimizing the distance that the signal must be transmitted. It should be noted that the transmitter loses its transmission range as the battery wears down.

We wanted to learn if heartwatches were susceptible to measurement artifact (error) during data collection. If so, we wanted to uncover the conditions that led to artifact. We intentionally removed each of the two electrodes from the body briefly while holding the other one securely in place. The heartwatch simply maintained the current heart rate readout for a while, and reported new heart rate samples when we returned the second electrode to the body. It would even maintain the current heart rate readout for a moment if both electrodes were removed from the body. As soon as they were returned to proper contact with the body, the heartwatch responded with new heart rate samples.

If either or both electrodes were removed from the body for longer than approximately 7 seconds, the heartwatch reset its heart rate readout to zero. If electrode contact was intentionally broken for less than 5 seconds, heart rate readout was not interrupted. The most immediate indicator of ongoing heart rate sampling was the regular blinking of the large heart symbol in the lower left corner of the receiver display. As long as the symbol blinked, heart rate was being successfully sampled. We did not consider it a measurement artifact when the heartwatch reset its display to zero, but rather a warning to the user that an invalid signal had been received, or that signals had not been received during an interval when they had been reasonably expected.

We did experience two kinds of measurement artifact, however. These artifacts were isolated readings of heart rates much higher or much lower than were reasonably expected. As an example of heart rates that might be reasonably expected, most of our subjects recorded heart rates of 60 to 80 beats per minute while quietly resting before performance, and 70 to 90 beats per minute while performing music, usually with no audience. When performing vigorous exercise, subjects often attained heart rates of 130 to 160, depending upon their age and physical condition. We operationally defined it to be a measurement artifact when a heart rate abruptly changed to a value that was more than double or less than half the value of the previous and successive readings. Less than one percent of our sampled data could be considered artifact under this definition.

Despite our repeated attempts to intentionally produce an artifact, we only succeeded in doing this one time, and we did this by removing one electrode from contact with the body. Nine out of ten times when we did this,

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the instrument would reset the heart rate display to zero rather than produce an artifactual reading. To combat the effect of occasional measurement artifacts, we recommend that user program the heartwatch to sample heart rate more often than is "needed" in their study. It would be safer, for example, to accumulate heart rate every 15 seconds and average it across 4 readings rather than accumulate a reading only once in 60 seconds.

We also watched for evidence of electromagnetic interference in our use of the instrument, and we observed none. The manufacturer lists televisions sets, electric motors, vehicles including airplanes, radio and television antennas, and high voltage power lines as sources of strong electromagnetic radiation (p. 16, manual). Users should avoid close proximity to these things while using the heartwatch in order to assure the most accurate readings.

The manufacturer cautions that a person using a heartwatch should not come closer than three and one half feet away from other individuals using similar equipment (p. 16, manual). There is a possibility that the receiver might report data from another person's transmitter rather than that of the user, or it might report an error because of receiving data from both transmitters. In view of our experiment on effective transmission distance, we think that users of the heartwatch should come no closer than five feet away from other users of the heartwatch. This would prevent the simultaneous measurement of all the people in a small ensemble unless they were seated at comparatively large distances from each other.

We found that our subjects were easily able to recall stored heart rate data using our simplified instructions and the manual readout procedure. Once begun, the readout progressed very rapidly, however. It is possible to interrupt the readout by pressing one of the control buttons, but we suggest that researchers either have an assistant available to write down stored data or that they read the stored data aloud into a tape recorder for transcription later. Stored data will not be erased until new data are recorded.

The manufacturer states that with two to three hours of daily use, the transmitter battery will last approximately one to two years and the receiver battery will last approximately one year. In our own use, the batteries lasted approximately two years in each unit as long as they were strong at the time of installation. One battery was not and it had to be replaced one month later.

The receiver battery is beginning to fail when the readout begins to lose its contrast. Erratic heart rate values can indicate the need for a new transmitter battery, a new electrode strap, or both. If the erratic nature of the readouts can be stopped by bringing the receiver closer to the transmitter, a failing transmitter battery should be suspected. If a new transmitter battery does not correct the erratic readout, a new electrode strap is probably needed. One subject reported that the receiver stopped displaying her heart rate when she turned slightly to the side and the receiver was no longer in front of the transmitter. We were unable to replicate this observation, and we hypothesized that it was caused by a weakening transmitter battery.

Although the manufacturer recommends going to a jeweler for battery replacement, we found that we were capable of doing the job ourselves. However, it was necessary to very carefully note the position of the old battery and quickly insert the new one in the same position. We recommend that the manufacturer add photos and instructions for doing this in any revision of the

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manual, while continuing to recommend professional battery replacement for those who prefer not to do it themselves.

A far more challenging problem for heartwatch users is to simply maintain a supply of BR2325 lithium batteries in good condition. In a metropolitan area of approximately 500,000 population in the Midwestern United States, we were able to find this battery at the heartwatch dealership, at a large local chain of discount stores, and in some but not all outlets of a national discount electronics store. Retail prices ranged from $5.00 per battery at the dealership to $1.69 per battery at the discount stores.

The difficulty was that none of these sources could be depended upon to quickly replace their BR2325 battery stock after selling all of the batteries they currently had. During the course of this study we bought batteries from four different stores, and on one occasion the new battery we bought was within one month of the end of its service life. For this reason we recommend that any user of the heartwatch buy a battery tester that will evaluate 3 volt button batteries, and maintain a supply of two new batteries for every heartwatch in use in the project. Computer Instruments Corporation will sell the BR2325 battery by mail at a retail price of $3.95 per battery and will arrange COD shipment for purchases of $25.00 or more.

As noted earlier, the electrode strap of the heartwatch has a finite life. One of ours failed after approximately two years, and the demands of a research project involving many different subjects will place more wear on the strap than typical use by one individual. We recommend that anyone using the heartwatch for research maintain an extra electrode strap for every heartwatch in use. The extra strap could be held in reserve, or it could be placed in use together with the original one with each adjusted to a different size. At the time of this writing, the retail price of an electrode strap is $33.00.

Conclusion

Based upon this detailed empirical assessment of the instrument, we conclude that the CIC Uniq heartwatch, Model 8799, is well suited for use in music research. We advise prospective users of the heartwatch to review our detailed findings presented above and plan their studies accordingly.

If heart rate is the dependent variable in a study, the heartwatch offers important advantages to the music researcher in comparison to more traditional physiological measurement instruments like the telemetric physiograph. Purchase price of the heartwatch is much lower than that of the physiograph, and the entire instrument and instruction manual will fit within a business envelope. The heartwatch has no bulky equipment associated with it which might intimidate subjects, and its portability and comparatively low cost make it a candidate for long term loan to subjects for purposes of longitudinal data collection. One would be reluctant to loan an instrument costing several thousand dollars to a research subject, and most music research budgets could not afford more than one unit of an instrument costing so much.

The heartwatch has an excellent verification characteristic, in which the subject or the researcher can tell at a glance whether or not the heartwatch is currently measuring heart rate. If it is measuring heart rate, the heartwatch is correctly installed. If it is not, something needs to be checked.

Our subjects enjoyed the feeling that they had control of the

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heartwatch, and they were happy to assume responsibility that data were actually being collected. This perception of "user-friendliness" will probably serve as an incentive for subjects to volunteer to participate in future heartwatch studies. We believe the heartwatch would be well received by subjects from middle school through college level.

When we spoke to a representative of Computer Instrument Corporation during preparation of this report, we were told that the Uniq Heartwatch, Model 8799, had been discontinued. It was replaced by a new model from the same manufacturer, Polar Electro. The new Polar Vantage XL is also distributed by Computer Instrument Corporation at a retail price of $369.00 per unit. A new type of computer interface has been designed, priced at $499.00 retail including connecting cable and software.

We purchased two new Polar Vantage XL heartwatches together with an interface and software for an IBM format microcomputer, intending to use them in future studies of music performance anxiety. We immediately began to test the new units to compare them to the CIC Uniq heartwatch.

The Polar Vantage XL is quite similar in physical appearance to the Uniq Heartwatch. The contact strips on the electrode strap are larger, and they now have a slightly grooved texture that should help them to retain water put there to improve electrical contact with the body. The receiver unit is considerably smaller, and its control buttons have been redesigned and relocated. The face of the receiver is still large enough to permit easy readout of its content. The entire unit is packaged in a rigid plastic box with ventilation slots for the electrode strap.

The instruction manual for the Polar Vantage XL is completely new. Clear drawings are used in place of the old photographs. There is a section on trouble shooting, and there are detailed and well illustrated instructions for changing the battery in both the transmitter and the receiver. Warranty is still for one year, and the same lithium battery (BR2325) is used in the new unit.

The Polar Vantage XL performs all functions of the Uniq Heartwatch, and incorporates a few additional ones. Data accumulation capacity has been greatly expanded, and it is easier to use the available storage because the Vantage XL can define eight data files in storage compared to the Uniq Heartwatch's one. This means, for example, that eight subjects could be tested with the Vantage XL before it would be necessary to upload or read out the data.

In preliminary testing, we found that the Polar Vantage XL delivered an essentially identical performance as that of the CIC Uniq Heartwatch. The instruction manual which came with the unit was even more complex than its predecessor, because of the added capabilities and the redesign of the control functions on the receiver. We would want to prepare our own simplified instructions before using the unit in research. We believe that the capability of creating up to eight data files in one testing session makes the Polar Vantage XL a significantly better research instrument than the CIC Uniq Heartwatch.

We found the optional computer interface easy to use, and there were no problems caused by loss or corruption of data. However, the software that accompanies the interface was designed for physical fitness evaluation and the monitoring of exercise programs. It was not designed to facilitate statistical analysis, and it does not compute the mean and standard deviation of each measurement session. It was necessary to reformat the data in order to use

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our own statistical software to perform an analysis, and this necessity considerably reduced the usefulness of the computer interface.

Two music researchers, Melissa Brotons and Philip Tartalone, completed doctoral dissertations using the Polar Vantage XL in studies of music performance anxiety. We interviewed both researchers, and they expressed satisfaction with the Polar Vantage XL as a measuring instrument. We intend to retain both our CIC Uniq Heartwatches and our Polar Vantage XLs for use in our own research projects. We will use the CIC Uniq Heartwatch in projects where simplicity of operation is important, and we will use the Polar Vantage XL in projects where its large data capacity will be helpful. We recommend the Polar Vantage XL for researchers who are purchasing new heart rate measuring equipment at this time.

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RELATIONSHIPS AMONG SELECTED DIRECTOR CHARACTERISTICS AND SECONDARY CHORAL DIRECTORS' USE OF NON-ENGLISH TEXTS

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This study was designed to investigate the use of non-English texts in Kansas secondary choral programs. Additional components of the study included factors which may influence the use of non-English texts, transliteration systems used to teach diction, origin of choral directors' diction knowledge, and diction resources used by directors.

Choral directors ($N = 379$) from all high schools in the State of Kansas were surveyed, and 57% ($N = 216$) returned usable questionnaires. Respondents reported undergraduate concentrations in applied areas as follows: Voice (59%), keyboard (27%), and other instruments (27%). Sixty-six percent of the respondents had baccalaureate degrees and 34% had graduate degrees. Twenty-five percent had three years or less of experience and 75% had four years or more of experience. Directors reported membership in choral-singing organizations (47%), music organizations other than choral/singing ones (36%), and no professional music organization (17%).

English texts were found in 82% of the total choral selections reported as rehearsed and/or performed. Latin texts were used in 11% of the selections while other languages included German (2%), Italian (1-2%), French (1%), and Spanish. Over 15% of the respondents selected only English texts for their choirs.

Results indicated that those who have taken a college diction class, whose applied concentration was voice, or who belong to professional choral-singing organizations use significantly more non-English texts with their choirs, are more comfortable with non-English texts, and are more likely to use the International Phonetic Alphabet (IPA). In addition, those with graduate degrees are more comfortable with non-English texts, and those with more secondary directing experience use more non-English texts.

Future research is suggested to examine the relationship between school size, choral program size, or population characteristics and use of non-English texts. Future studies should investigate why the IPA is not used more extensively, and what resources are preferred by college instructors of diction courses. These and other studies may stimulate discussion among choral music publishers to provide pronunciation guides for non-English texts in printed scores.

CLAUDE THOMAS SMITH: AMERICAN COMPOSER, CONDUCTOR, AND MUSIC EDUCATOR

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Claude Thomas Smith (1932-1987), nationally and internationally recognized as an outstanding composer, clinician, conductor, and music educator, was a native of Carrollton, Missouri. After completing two years of education at Central Methodist College, Smith enlisted in the United States Army and was assigned to the 371st Army Band in Fort Leavenworth, Kansas. It was during his three years in the 371st Army Band that Smith began to arrange and compose music. Following his military service, Smith completed a Bachelor of Music Education degree at the University of Kansas in Lawrence.

In 1958 Smith began a distinguished twenty-year career in music education which included high school teaching positions in Cozad, Nebraska; Kansas City, Missouri; and Chillicothe, Missouri. He taught at the university level for two years at Southwest Missouri State University in Springfield. The last nine years of Smith's life were devoted to composition and to his work as a clinician and conductor.

Smith's numerous compositions encompass the mediums of choral and instrumental music, particularly band music, and range in difficulty from an elementary level to a professional level. His commissions include works for renowned soloists and many of the nation's foremost military bands.

The purpose of the dissertation is to provide a comprehensive biography of the life of Smith and to document and record his many accomplishments. Many of Smith's activities are recorded in newspapers and periodicals, but only a limited number of studies have been completed which reflect the growing popularity of his compositions and his influence upon music composition itself. Numerous interviews of his students and colleagues, of prominent musicians, of the general public, and of his family for this study provide insight into Smith's acceptance and prestige during his lifetime. The appendices include a complete catalogue of his published and unpublished compositions and selected programs and photographs.

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THE EFFECTS OF VOCAL MODELING AND MELODIC DIRECTION ON DEVELOPMENT OF HEAD VOICE PLACEMENT IN 4-YEAR-OLD, NONSINGING CHILDREN

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The purpose of this study was to investigate the effect of three variables on incidence of head voice singing in 4-year-old children: gender of subjects, voice placement of model, and ascending versus descending melodic line. Judges rated children as being in head voice (3), middle voice (2), chest voice (1), or nonsinging (0) level.

Eighty-seven 4-year-old nonsingers selected from eight daycare centers in a midwest, metropolitan city were randomly divided into two treatment groups. The head voice treatment group (*n* = 45) included 21 boys and 24 girls; the chest voice treatment group (*n* = 42) included 20 boys and 22 girls. Groups were subdivided into two treatment plans with training materials utilizing predominantly ascending or descending melodic patterns. Within each treatment group, gender was considered an independent variable. Two music educators, using detailed lesson plans administered 10 training sessions of 15 minutes each extending over a period of one month. Following these sessions, subjects were tested over two songs they had learned during training.

Five judges who had received special training in identification of child head voice quality, child middle voice quality, and child chest voice quality rated 174 singing responses for voice quality (3 = head, 2 = middle, 1 = chest, 0 = spoken response). The results of the analysis showed that the number of subjects who sang in head voice placement after exposure to a head voice model were significantly higher than the number of subjects who sang in head voice placement after exposure to a chest voice model, $X^2(2, N = 87) = 30.90$, $p < .05$ for Song 1, and $X^2(2, N = 87) = 16.82$, $p < .05$ for Song 2. No significant difference was found related to gender or melodic direction with a head voice model. With a chest voice model, there was a significant difference, $X^2(2, N = 42) = 9.44$, $p < .05$ in favor of ascending melodic patterns in Song 2.

A STRATEGY FOR INCORPORATING CRITICAL THINKING INTO THE CONDUCTING CURRICULUM

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The primary purpose of this research was to develop an instructional tool whereby deliberate incorporation of critical thinking activities into the conducting classroom can be achieved. This study was also designed to provide descriptive data examining whether the use of critical thinking techniques would be feasible and beneficial to the development of undergraduate conductors.

A feasibility study was undertaken to field test critical thinking materials in the laboratory sections of a basic conducting class. One group (*n* = 5) participated in critical thinking activities. While no significant differences were found between the cumulative conducting skill scores of the two groups, an Attitude Survey revealed that the critical thinking activities appeared to stimulate critical thinking on the part of the treatment group, which also indicated higher self-confidence levels by self-report than did the control group. A notable observation is that the deliberate infusion of critical thinking activities into the course did not hinder the skill development of the beginning undergraduate conductors in the treatment group. It is also important to note that the Attitude Survey indicated that individual attention had a positive effect on the attitudes and skill improvement of both groups of beginning conductors.

For the proposes of this study, critical thinking as it relates to the teaching of conducting was operationally defined to include the following components:

> The conductor who thinks critically will be able to recognize and modify ineffective conducting gestures, have a continually developing repertoire of rehearsal techniques, be able to make rehearsal pacing judgments based upon the needs/attention of the ensemble and requirements of the music, and make informed decisions regarding musical interpretation which will be communicated with an appropriate physical gesture.

The proposed curriculum strategy was generated in an attempt to provide the means for developing conductors who meet the criteria established by the operational definition.

A Curriculum Proposal and a Conductor's Critical Thinking Workbook were developed in an attempt to describe various methods whereby critical thinking could, in a conscious and deliberate fashion, be incorporated into the traditional conducting curriculum. Critical thinking exercises included in the workbook were sequenced and categorized according to the thinking operations suggested by Louis E. Raths, as well as the basic physical skill categories common to most conducting textbooks. The Workbook's design is such that it can be adapted for use by each individual instructor, regardless of textbook being utilized. It is also structured in such a way that it can be used with flexibility in or out of the formal classroom setting.

The function of the Workbook is to provide a graduated sequence of activities that involve both psychomotor skills and critical thinking exercises. It is intended that by using this Workbook as a regular part of instruction the conducting students not only will improve their psychomotor skills, but will begin to draw connections between the various musical elements that contribute to their becoming effective conductors.

The Workbook is divided into five sections in an attempt to address both psychomotor skills and critical thinking activities as follows:

I. Time Beating
II. Cues and Expression
III. Score Study
IV. Rehearsal Technique
V. Interpretation & Style

The following list, while not conclusive, will indicate the variety of thinking-related operations which are utilized in the Critical Thinking Workbook.

- Observing
- Classifying
- Hypothesizing
- Applying
- Comparing
- Interpreting
- Criticizing
- Evaluating
- Summarizing
- Looking for Assumptions
- Predicting/Imagining
- Creating

The underlying philosophy for the entire sequence, approach, and use of the Conductor's Critical Thinking Workbook is that of building a foundation and "ground of experience" that will facilitate independent and critical thinking on the part of undergraduate conductors. It is hoped that in laying this primary foundation conductor skill and effectiveness not only will improve, but young conductors will have ready access to the cognitive tools necessary to attempt to solve more challenging conducting problems as they are encountered.

What emerges through a review of the literature is that the ability to think critically is an assumed characteristic of the effective conductor. By this study's operational definition, the conductor who thinks critically will be able to recognize and modify ineffective conducting gestures, have a continually developing repertoire of rehearsal techniques, make rehearsal pacing judgments based upon the needs/attention of the ensemble and requirements of the music, and make informed decisions regarding musical interpretation that will be communicated with an appropriate physical gesture. If these goals are to be achieved, it becomes imperative that teachers of conducting begin to address deliberately the cognitive aspects of conducting as aggressively as they traditionally have emphasized psychomotor development.

THE INFLUENCE OF ISOLATED RHYTHMIC TRAINING WITH A SELECTED METHOD OF STUDY ON THE ABILITY TO SING MUSIC AT SIGHT

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The purpose of the present study was to determine whether students who received rhythmic training would show greater achievement in sight reading skill than similar students who did not receive that training. In addition, the study determined if there would be a statistically significant interaction of gender, major, or band experience with students who received rhythmic training and similar students who did not receive that training. The program of training utilized the rhythm skill sheets of Thostenson (1967).

Ninety-two students enrolled in Concert Choir at Western Illinois University were subjects for the experiment. The subjects were placed into two similar groups: (a) the control group ($N = 48$) and (b) the experimental group ($N = 44$). The melodic portion of Thostenson's (1967) Criterion Sight Singing Test 76 (CSST76) was administered as a pretest and posttest for all subjects.

Concert Choir met for three fifty minute rehearsals a week. For a period of seven weeks, the control group was dismissed from the last seven minutes of each rehearsal. The experimental group continued the rehearsal utilizing Thostenson's (1967) program of rhythm training. After the posttest was administered, the experimental treatment was reversed with the control group receiving the rhythm training for the remainder of the semester. Neither group was cognizant of being the experimental or control group.

An analysis of covariance (ANCOVA) which adjusts posttest scores for pretest scores by a regression procedure was used to determine the effectiveness of the program of rhythmic training on sight reading ability. For method, the ANCOVA summary showed a statistically significant difference, $F = 5.244(1, 91)$, $p = .025$. The experimental group achieved the highest mean score. From this finding, it was concluded that the program of rhythmic training did improve the ability to sight read and that a transfer of rhythm reading to sight reading did take place. For method related to gender, the ANCOVA summary also showed a statistically significant difference, $F = 4.28(1, 91)$, $p = .042$. The difference in score was in favor of the males with training. Therefore, males who received rhythmic training showed the greatest achievement in sight reading skill. No statistically significant difference was found for method related to major or band experience.

THE EFFECT OF MULTICULTURAL DANCE ON FIFTH GRADE STUDENTS' ATTITUDES AND ACQUISITION OF MUSICAL CONCEPTS

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The purpose of this study was to determine the effects of multicultural folk dance on fifth grade students' acquisition of music concepts and attitudes. Research suggests a close relationship between motor activity and mental activity, such that movement facilitates and enhances conceptual learning. Thus, emphasis on active learning experiences enhances the learning environment. Even though the Music Educators National Conference and other professional organizations are proponents of music teaching from a multicultural perspective, the effects of multicultural education, through activities such as folk dance, on student learning and attitude remain largely unexamined.

Four groups were formed (multicultural dance, unrelated movement, no movement, and control [no movement/no multicultural studies]) for comparisons in this study. Four hypotheses were constructed to guide investigation of the difference between groups regarding acquisition of knowledge concepts and attitude. Conceptual knowledge and attitude inventory posttest data were examined. Multicultural instruction, which included folk dance, produced statistically significant ($p<.01$) increases in instrumental, musical, and cultural knowledge concept scores when compared to other multicultural groups (unrelated movement and no movement) and a control group. Attitude difference between movement groups and non-movement groups was statistically significant ($p<.01$). The unrelated movement and folk dance group scored higher than no movement and control groups in attitude toward specific multicultural music selections, multicultural music in general, and multicultural folk dance. There was no statistically significant difference between the unrelated movement and folk dance group for these variables.

THE EFFECT OF PITCH MATCHING STRATEGIES ON THE PITCH MATCHING ABILITIES AND ATTITUDES OF MIDDLE SCHOOL SINGERS

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University of Missouri-Kansas City

Research detailing middle school singers, changing voices, attitudes, pitch matching, and pitch matching assessment provided a basis for this study which sought to determine the effect of pitch matching strategies on pitch matching accuracy and attitudes of middle school students. Subjects were sixth, seventh, and eighth grade students (*N* = 207) from a suburban middle school divided into two treatment groups and one control group. Changes in pretest to posttest pitch matching abilities and attitudes were examined.

Subjects (*N* = 207) participated in Pitchmaster or Individual Help treatments. A Control group was utilized. Significant differences in pretest-posttest comparisons were not found to be a function of treatment condition. All groups showed a significant improvement in pretest to posttest pitch matching abilities. A significantly positive progression of pretest to posttest attitude scores was found in the Individual Help and Control groups. There was a significant difference between the posttest attitude scores of the good and poor pitch matchers, with the good pitch matcher exhibiting more positive attitudes. There was no significant difference found in the achievement of students in the treatment methods used in this study. It was determined that positive musical experiences and/or vocal maturation could have affected the refinement of the abilities and attitudes.

THE EFFECT OF SEQUENTIAL AND SPACED DAYS SCHEDULING OF ELEMENTARY MUSIC INSTRUCTION ON LEARNING FOR TWO SELECTED SKILLS

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University of Missouri-Kansas City

Music educators agree that learning is a primary goal. Research has not investigated the relationship between instructional schedules of elementary classroom music and student achievement.

The purpose of this study was to compare the effectiveness of sequential (Monday/Tuesday) and spaced days (Tuesday/Thursday) schedules regarding learning for cognitive and kinesthetic skills. A prerequisite purpose was to determine the amount of learning occurring within either schedule. The subjects ($N = 39$) were members of two intact fourth-grade classes at a public elementary school in a suburban midwest city.

This study provided for instruction and testing of cognitive skills (five class periods) and kinesthetic skills (three class periods). The cognitive topics included treble clef notes, rhythm symbols, time signatures, and counting notation. The soprano recorder was the musical instrument used in the kinesthetic portion of the study. A pretest was administered on the first day of each unit and a posttest on the last day of each unit. The posttest was given on the first day of the regular weekly music schedule. The school's music specialist (who was also the experimenter) administered the study and evaluated the tests. A variety of teaching tools were used in the lesson plans: written exercise drills, overhead projector transparencies, and chalkboard drills.

Results of the study showed: (a) there was no statistically significant difference in the Class A (sequential days) and Class B (spaced days) posttest cognitive scores ($t = .12$, $p = .908$); (b) there was no statistically significant difference in the Class A and Class B posttest kinesthetic scores ($t = .20$, $p = .843$); (c) there was a statistically significant difference in the pretest and posttest cognitive scores of Class A ($t = 3.86$, $p < .001$); (d) there was a statistically significant difference in the pretest and posttest cognitive scores of Class B ($t = 5.56$, $p < .001$); (e) there was a statistically significant difference in the pretest and posttest kinesthetic scores of Class A ($t = 13.92$, $p < .001$); (f) there was a statistically significant difference in the pretest and posttest kinesthetic scores of Class B ($t = 29.96$, $p < .001$).

The hypotheses and their results indicate that learning was taking place over time. Learning of the two selected skills, however, was not significantly influenced by the instructional schedules used in this study.

GRADING APPROACHES FOR MUSIC PERFORMANCE CLASSES: A SAMPLE SYSTEM FOR HIGH SCHOOL CHOIR

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Master of Music
University of Missouri-Kansas City

The purpose of this study was to design a sample grading system for high school choir. Problems specific to grading music performance groups were investigated. Related literature was reviewed to find sample grading systems and suggested guidelines for setting grading systems. Using that information, a sample grading system was devised. Evaluation sheets to assess capabilities were also constructed.

INSTRUCTIONS TO CONTRIBUTORS

Editorial Policy and Procedures:

The editorial committee welcomes contributions of a philosophical, historical, or scientific nature which report the results of research pertinent in any way to instruction in music as carried on in the educational institutions of Missouri.

Manuscripts are reviewed by the editorial board in a blind review process. The collective recommendations of the reviewers determine whether a manuscript will be accepted for publication. Manuscripts submitted for review must not have been published nor be under consideration for publication elsewhere.

The editorial committee subscribes to the research Publication Presentation Code of Ethics of the Music Educators National Conference and the National Research Committee of the National Association of Music Therapy.

Format and Style:

Articles should be typewritten with double spacing on 8.5 x 11 paper. Articles normally should not exceed 20 pages in length. Manuscript style should follow recommendations of the *Publication Manual of the American Psychological Association* (3rd Ed., 1983). All figures and tables should be submitted camera ready.

To assure anonymity during the reviewing process, author's name(s) and address(es) should appear on a separate cover page only. Names and other material in the text which might identify the author(s) should be avoided.

Authors should submit four copies of their article to the editor.

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Contributors will be notified of the decision of the editorial board.

MISSOURI JOURNAL OF RESEARCH IN MUSIC EDUCATION

Number 31

1994

Published by the
Missouri Music
Educators Association

MISSOURI JOURNAL OF RESEARCH IN MUSIC EDUCATION

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MISSOURI JOURNAL OF RESEARCH IN MUSIC EDUCATION

Published by the Missouri Music Educators Association

Number 31 1994

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PREFACE

The *Missouri Journal of Research in Music Education*, published by the Missouri Music Educators Association, is devoted to the needs and interests of teachers of music in Missouri and the nation. This issue is the thirty-first.

The members of the editorial committee are grateful to those readers who have written suggestions concerning the content of past issues and request that comments and suggestions again be sent to the editor concerning the content of this issue. We strive for a reasonable balance among music theory, history, philosophy, aesthetics, and pedagogy.

We express our deep gratitude to the Missouri Music Educators Association for their financial support to make it possible to continue to publish the *Missouri Journal of Research in Music Education*.

The Editorial Board

CORRECTION:

The research described in the article "Suitability of a Personal heart Rate Monitor for Use in Music Research" which appeared in Volume 30 of the *Missouri Journal of Research in Music Education* was supported by a grant from Yamaha Corporation of America, through the National Music Education Research Project. The editor apologizes to the authors, Albert LeBlanc, Patricia Shehan Campbell and Peggy Codding, for the omission of this information in Volume 30.

DEVICES FOR RECORDING ONGOING RESPONSES TO MUSIC IN EDUCATION AND THERAPY

William E. Fredrickson
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Much current research in the areas of music education and therapy requires measurement of human response to music. By recording, categorizing, and measuring responses, researchers gather information which can recommend a course of action for the educator or therapist. In this way, research and practice come together in a productive union.

In the past, measurement of musical response has often taken place "after the fact." Questionnaires, adjective lists, and free operant responses provided information about a subject's recollection of the phenomenon in question. While yielding a great deal of useful information, these methods may not paint the entire picture. There can be instances when the response is so far removed, temporally, from the actual event that subjects' memory of the perception has been altered slightly by time or subsequent events. But, if performed during the event, the act of recording could serve as a distraction from the music, again jeopardizing the accuracy of perception. There are also populations, most notably young children and some handicapped individuals, for whom "paper and pencil" responses are not practical.

In recent years, technology has allowed researchers to begin to use devices which allow for the ongoing measurement of responses to music. This became practical when the interfacing of response recording devices with computers gave researchers a means of recording subject responses in time (Madsen, 1990).

Review of Literature

While there have been many measurement tools developed for the specific needs of a particular study, a relatively small number have appeared in the literature which could be considered for a broader range of uses. The devices considered here are all capable of measuring human responses to music in real-time situations.

Clynes developed a device called the Sentograph to measure the expression of emotion in music, which he labeled Essentic Form. Clynes' research in this area led to the conclusion that "functional characteristics of Essentic Form were delineated from extensive studies of expressive finger pressure, a uniquely measurable type of expression" (Clynes & Nettheim, 1982, p. 51). The subject response portion of the device was designed to record varying degrees of pressure from subjects' fingers. A good description of the device is found in a replication by de Vries (1991):

> It consists of a small box, from which a button with a diameter of 2.5 cm protrudes; the button can give about 2 mm in all directions when pushed. Through strain gauges on bending strips and some electronic circuitry in the box, a pressure on the button is translated into a voltage that is

proportional to this pressure.

At about the same time, Nielsen (1983) developed a device designed to specifically measure subjects' ongoing perception of tension in music. A set of spring-loaded tongs, pressed in accordance with perceived musical tension, allowed responses to be recorded in real-time. This allowed the responses to be compared to the music in a direct relationship. A replication of Nielsen's experiment using the musical recording, similar populations, but a different device (a Continuous Response Digital Interface) found that the results appear to be reliable (Madsen & Fredrickson, 1993). Graphic analysis of data gathered in both experiments showed similar results from two very different devices used with separate groups of subjects.

Namba, Kuwano, Hatoh, and Kato (1991) developed a method for assessing emotional impressions of recorded music called "the method of continuous judgment by selected description." In a series of three experiments a list of descriptive adjectives was developed. Adjectives were assigned a key on a standard computer keyboard and subjects were given approximately 30 minutes of training in the use of the device. Subjects were instructed to press the key that corresponded to the adjective which described their feeling about the music at any given moment. Responses were measured in real time by the computer. Multidimensional recording of response (more than one adjective for a given moment of music) was made possible by the pressing of two keys, one after the other, in "quick succession, like playing a trill on a piano" (Namba, Kuwano, Hatoh, & Kato, 1991, p. 261).

Another device currently in use, by a number of researchers, was developed in The Center for Music Research at the Florida State University. The Continuous Response Digital Interface (CRDI) was preceded by a device utilized by Cotter and later modified by Greer and Kuhn (Madsen, 1984). The CRDI is a potentiometer interfaced with a computer. A potentiometer is a device which allows voltage levels to be gradually raised and lowered. One of the more common uses of a potentiometer is as a "dimmer switch." The potentiometer is manipulated by the subject, either using a lever or a dial, depending upon the nature of the experiment. In one of its early uses, adjudicating high school choral performance, Robinson (1988) described the "dial" version of the device and its operation:

> The CRDI utilized a potentiometer which was enclosed in a protective case and mounted into a 1/4" thick plexiglas square (13" x 13") with only the stem of the potentiometer protruding through the plexiglas. Affixed to the potentiometer stem was a one-inch knob with a specially designed pointer and guide mechanism such that it could be moved left and right on an arc of two hundred fifty degrees. (p. 33)

The "lever" version is described in a study by Standley (1991) in which the device was used to measure subjects' level of comfort/discomfort as affected by vibrotactile and auditory stimuli:

> ...a rectangular box with a projecting potentiometer in the

> shape of a lever. The lever was moved by the subject as often as desired across color coded tabs on an 11-point scale ranging from +5 to -5 with a 0 in the center. The top of the scale (+5) was labeled, COMFORT, with the bottom (-5) labeled, DISCOMFORT. (p. 125)

The CRDI has been used to measure responses in a variety of areas, including focus of attention during music listening (Madsen & Geringer, 1990; Rentz, 1992); music preferences for children (Edenfield, 1989), and adults (Brittin, 1991); adjudication in concert band (Johnson, 1992a) and marching band settings (Johnson, 1991); the aesthetic experience in music (Madsen, Brittin, & Sheldon, 1993; Sheldon, 1992); for musicians as well as nonmusicians (Madsen, Byrnes, Capperella-Sheldon, & Brittin, 1993); perception of tempo changes (Sheldon, 1991); good versus bad intonation (Madsen, Geringer, & Heller, 1991); use of rubato in musical performance (Johnson, 1992b); perceived tension in music (Madsen & Fredrickson, 1993); teacher self-evaluation (Gregory, Brittin, Edenfield, 1990) and music responses of special populations (Madsen, Capperella-Sheldon, & Johnson, 1991). It has proven to be a reliable device for collecting ongoing perceptual responses to various stimuli (Capperella, 1989; Madsen & Fredrickson, 1993). Although, over time, the reliability of this device appears to be quite strong, current research does not address the question of validity in a decisive manner.

Comparisons

The populations observed by researchers in the areas of music education and therapy are quite disparate. Age, musical proficiency, and physical limitations can be widely diverse. This can cause special problems for the researcher in search of a means of measuring the responses of a wide range of subjects to a variety of music and music related stimuli.

The Sentograph (Clynes & Netthelm, 1982) might be adapted to serve certain populations of interest to the music education/therapy researcher. Fine motor manipulation of fingers would be possible for a wide range of subjects. Developing appropriate associations between finger movements and music stimuli could allow an experimenter access to subjects' perceptions. However, replication of Clynes' research called into question the ability of subjects to accurately manipulate the device without extensive training, noting that it appeared that subjects tended to have "an individual way of handling the sentograph" (de Vries, 1991, p. 61). There might also be difficulties with populations for which such fine gradations of motor movement are not reliable or even possible.

Nielsen's (1983) device has proven itself to be reliable in measuring at least one aspect of musical perception (Madsen & Fredrickson, 1993). While functioning well for perceived "tension," the seemingly specialized nature of the subject response portion of the instrument raises the question of uses for the device in other applications. A problem for certain experimental populations might also be encountered when squeezing or pressing motions are required of the subject.

By altering a standard computer keyboard, Namba, et al, (1991) overcame the need for specialized devices and some of the problems associated with them. While these experiments show that it is possible to use the computer keyboard effectively as the response device, the application for young and/or handicapped populations remains limited both by the need for fine motor response and the training time and/or comprehension necessary depending upon the complexity of the task. A keyboard also imposes limitations on the type of data that can be collected. Each key would have to represent a single level of response, so while recording of responses over time would be continuous, the responses themselves would start and stop with, as well as be limited by, key presses by the subject.

The Continuous Response Digital Interface (CRDI) has been employed in a variety of perception tasks. The CRDI dial can be used both to measure discreet items or points along a continuum. Rentz (1992) divided a CRDI box into sections labeled to represent different families of instruments. Subjects were then asked to move the lever to indicate which instrument family was being focused on at any given time during a recording. Madsen and Fredrickson (1993) replicated the work of Nielsen (1983) by asking subjects to indicate the perceived "tension" in a piece of music by moving a CRDI dial along a continuum or "tension curve." The results matched those collected by Nielsen using a device designed to simulate a feeling of tension. Here a graphic representation was able to substitute for the kinesthetic experience while taking a continuous measure along a continuum.

Brittin (1991) used CRDI dials for discreet and continuous measurement simultaneously by asking subjects to use one dial to classify different excerpts of popular music and, at the same time, rate their enjoyment of the music being played using a second dial. On the other end of the spectrum from a complex perceptual task involving two different forms of measurement, Madsen, Capperella-Sheldon, and Johnson (1991) utilized a CRDI lever and box to measure perceptions of various musical stimuli by handicapped and non-handicapped children. All the children, ages 2 to 5 years, were able to manipulate the lever and indicate preference along a continuum by moving between happy, neutral, and sad faces affixed to the lever box.

In one experiment, both versions (lever and dial) were used for recording different aspects of subject response. Standley (1991) gave subjects a CRDI lever which they moved to indicate the level of comfort or discomfort during a stimulus. At the same time the researcher monitored subjects' heart rate and recorded it by manipulating a CRDI dial marked with pulse beats-per-minute. Fredrickson (in press) had subjects use a dial to rate the ability of a second subject to play "in ensemble" with a band. The researcher also used the dial in a post hoc analysis of videotapes where eye-contact between an instrumentalist and conductor was recorded for later analysis. In these two examples the device was used to both record subjects' perceptions of a musical event, and to record data as observed by a researcher.

The data collected under these circumstances often lends itself to graphic analysis. A sample of a graph of a single subject response to a stimulus might appear as shown in Figure 1.

The researcher can use this information to pinpoint instances in time, when a subject responds during a musical stimulus. From there, conclusions might be drawn as they relate to what was happening in the stimulus during the point at which the subject response went up (or down) depending on the task.

Although a fairly large body of extant research using the Continuous

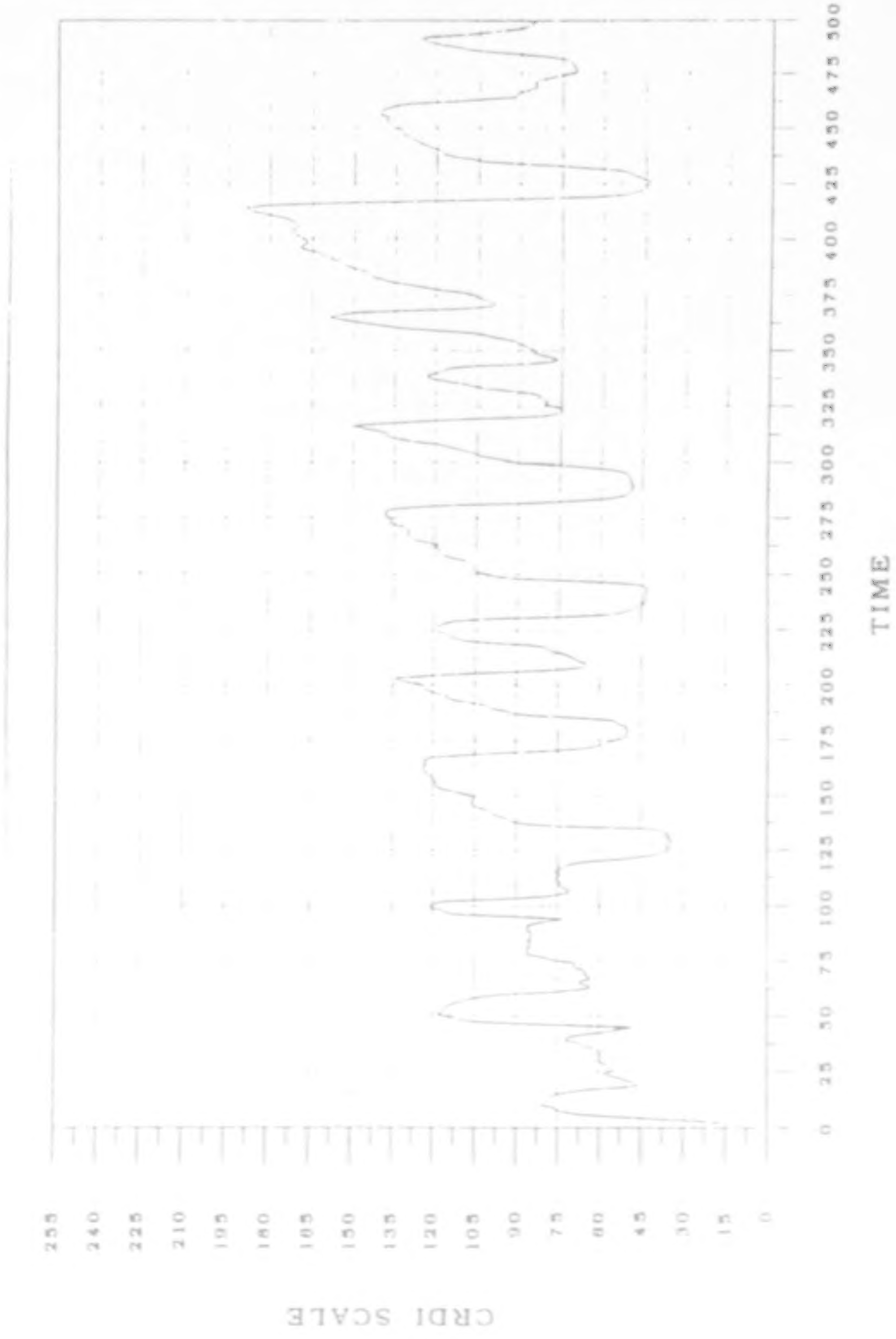

Figure 1. Graph of Sample Response Data

Response Digital Interface exists, some important questions about its use remain unanswered. The nature of perceptual research can make it difficult to establish validity (knowing exactly what is being measured, since it is the subjects' perception) even when reliability between and among subjects or devices has been established. Future research will need to address this as part of the larger question of exactly what human perception is. Another area includes the populations for which this is a useful device. Severely physically handicapped subjects might still find the dial and/or lever too limiting for accurate recording of responses.

Considerations

For the researcher considering the use of any device to record ongoing perceptions of musical events there are a number of considerations. The first might be the population. Will there be children (what ages), adults, and at what levels of musical experience? Will the population be handicapped in some way either physically or mentally? What types of responses are they capable of making?

The second might be the type of response necessary to collect the data. Will it be choosing one out of a group of several possibilities (the strings are playing, now the brasses are playing, etc.) or a yes/no type of response (the player is looking at the conductor vs. the player is not looking at the conductor)? Will it be a measure somewhere along a continuum, and if so, will the continuum be delineated by a Likert type scale, a succession of sad through happy faces, numbers, letters, free zones simply going from negative to positive or will there be no visible representation for the subject so the response is gauged kinesthetically or aurally?

Data could be taken by observing a subject doing something. It would seem best for subjects to record their own responses to music directly, but there are cases in which an observation of a subject's reaction to a musical event can yield useful information. Does the musician appear to be on task or off task at any given point? What is the ensemble director doing at that moment? At what level is the "intensity" of the music teacher or even the student teacher in that setting? What is the client's heart rate or temperature, level of physical activity, eye contact or attentiveness?

An important question is, how often is it really necessary to sample the reactions of the subject? If an event takes place over a long period of time (days, weeks, months) is a device for continuous measurement really necessary? Would simpler means of record keeping yield just as much information? Could the event be time sampled rather than continuous? Even though the technology is available, does it provide more useful information? The latter may be the most important question the researcher asks in relation to any given situation.

The method of data analysis used must also be considered. The use of statistical and/or graphic analyses should be weighed as they relate to appropriate usage and the information they import. Statistics for their own sake add little to knowledge, but the proper use of statistics can lower the probability that the researcher is giving false or misleading information.

It would seem that, when it is appropriate, the technology is available to provide researchers in music education and music therapy with the means to record ongoing responses to music related activities. As in any field, time and human curiosity will provide more advancements. But the primary focus of research must be the gathering of information to facilitate effective music education and therapy.

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THE EFFECT OF TIME FACTORS AND LEARNING ON SINGERS' PREFERENCE FOR SELECTED CHORAL REPERTOIRE

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Choral conductors are generally confronted with the responsibility of building a concert program that is both engaging and challenging for singers (Brunner, 1992). Unfortunately, this issue is not often addressed in conducting or music education texts. Conductors must frequently obtain repertoire and programming ideas from reading sessions or from experience--their own or that of others. While collecting programs may help, by providing ideas for building a concert program, the task is complicated by the specific needs of each group and of each concert occasion.

Decker and Kirk (1988) explained that the conductor of a pre-professional choral ensemble must be an interpreter of music, a teacher of skills, and an organizer of experiences; repertoire selection is an important contributing factor in the attainment of these goals. They also stated that criteria for repertory selection should include the "vocal and emotional maturity of singers; the attainment of teaching-learning objectives, with concern for age level, musical readiness, and rehearsal time available; the development of artistic potential and musical responsiveness; and the building of interesting and engaging concert programs that satisfy philosophical and practical considerations" (p. 151).

Concert programs can be developed using a number of methods which include a unifying theme (special occasion, specific composer, specific historical period, etc.), an historical continuum, sequenced tonalities, and so forth. Swears (1985) stated that "the choral performance should be organized with two primary concerns in mind--what will provide the best performance order for the chorus and what will be the most satisfactory presentation as a whole for the audience" (p. 170). On the other hand, Green (1987) suggested that the conductor consider interest, contrast, and sequence in programming with a particular emphasis on the audience's point of view. Regardless of reasons for making selections, texts imply that the program should have a shape, building up to some point of intensity.

Studies show that repeated listenings and listening instruction tend to increase likability of musical selections (Bartlett, 1973; Bradley, 1971; Bradley, 1972; Brown, 1978; Getz, 1966; Hargreaves, 1984; LeBlanc, 1982; Moskovitz, 1992; Price, 1988; Price & Swanson, 1990). Finnäs (1989) summarized a series of studies which showed that repeated listening to serious musical pieces or excerpts may lead to higher preference. Studies concerning the effect of familiarity with music are also discussed. All of the above cited studies deal with listening as a static activity, as opposed to the evolution of certain listening skills such as those which occur over time and are often developed by performing in an ensemble.

Lantz (1991) addressed specific questions regarding factors influencing preference decisions for selected choral repertoire. Specific questions addressed by Lantz' study included the effect of group membership on preference ratings for selected choral repertoire, the difference between teacher and student preferences, and the effects of age and educational experience on preference ratings. Additionally, the author investigated whether or not there were specific factors which influenced preference decisions. Results indicated that group membership had an effect on preference ratings, that no factors were significantly more influential than other factors on preference decisions, and that students' "most" and "least" favorite selections were different than teachers'. Lantz suggested that further research should include the measure of singers' preferences over an extended rehearsal period through performance.

The present study was designed to examine whether or not singers' preference for selected repertoire reflects commonly held ideas of concert programming. Additionally, the effect of learning and time on preference were investigated. Nested within the study were questions regarding perceived advantages of single and multiple performances and singer preference regarding one or the other.

Method

Subjects ($N=50$) were singing members of an auditioned choral group at a large southeastern university. Though the group consisted of 65 members, not all members went on tour, and of those that did go on tour, not all completed both the pretour and posttour surveys. The mean age was 20.9 years, with a range between 18 and 30 years of age. Of the fifty, 7 were Freshmen, 11 were Sophomores, 12 were Juniors, and 20 were Seniors; forty were music majors and 10 were non-music majors. There were 16 Sopranos, 13 Altos, 10 Tenors, and 11 Basses.

Subjects were asked to fill out a survey prior to their concert tour and a second survey following the tour. On the survey, subjects were asked to rank-order their preference for the six sections of the concert program. Additionally, they were asked to state their first and second preferred pieces. Finally, subjects were asked to state reasons for selection preference. Program and program section delimitations are included in Table 1.

Results

Group means for rankings of each program section were calculated, thus treating the ranking as if it were an individual rating of the section on a scale of 1 (best) to 6 (worst). Means for pre- and posttour ratings by sections are reported in Table 2 and Figure 1. Mean ratings were then used for comparison purposes. No significant differences were found when paired samples *t*-tests were run on pre- and posttour rating of program sections (Section 1, $t=.093$, $p=.926$; Section 2, $t=.552$, $p=.584$; Section 3, $t=.051$, $p=.051$; Section 4, $t=.151$, $p=.881$; Section 5, $t=1.033$, $p=.306$; Section 6, $t=1.609$, $p=.114$).

Paired sample t-tests comparing program sections in pretour survey results revealed significant differences between Sections 1 and 2 ($t=3.271$, $p=.002$), Sections 1 and 3 ($t=3.564$, $p=.001$), Sections 1 and 5 ($t=4.633$, $p=.001$), Sections 3 and 6 ($t=3.064$, $p=.004$), Sections 4 and 6 ($t=2.695$, $p=.010$), and Sections 5 and 6 ($t=2.796$, $p=.007$). Paired sample t-tests comparing program sections in posttour survey results revealed significant differences between Section 1 and 2 ($t=2.953$, $p=.005$), Sections 1 and 3

Table 1

Program order and selection titles/composers

Section 1	
With a Voice of Singing	Kenneth Jennings
Ave Maria	Franz Biebl
All You Works of the Lord	Kenneth Jennings
Section 2	
Sing Joyfully	William Byrd
When David Heard	Thomas Weelkes
Hosanna to the Son of David	Orlando Gibbons
Section 3	
Jauchzet dem Herrn	Johann Pachelbel
Section 4	
Trois Chansons Bretonnes	Henk Badings
La Nuit en Mer	
La Complainte des Ames	
Soir D'Ete	
Section 5	
Get to Bed	arr. Derek Healey
Danse, mon moin', danse!	arr. Derek Healey
Tvenne folkvisor	Lars Edlund
Ant han dansa med mej (The Dance)	
Femton finnar (Fifteen Finns)	
Section 6	
John Saw Duh Numbuh	arr. Parker-Shaw
Death is Gonna Lay His Cold	André J. Thomas
I Will Pray	Richard Smallwood

Table 2

Pretour and Posttour mean ratings by program section

Section	1	2	3	4	5	6
Pretour rank	2.52	3.64	4.08	3.92	3.84	2.90
Posttour rank	2.50	3.54	4.48	3.90	4.00	2.58

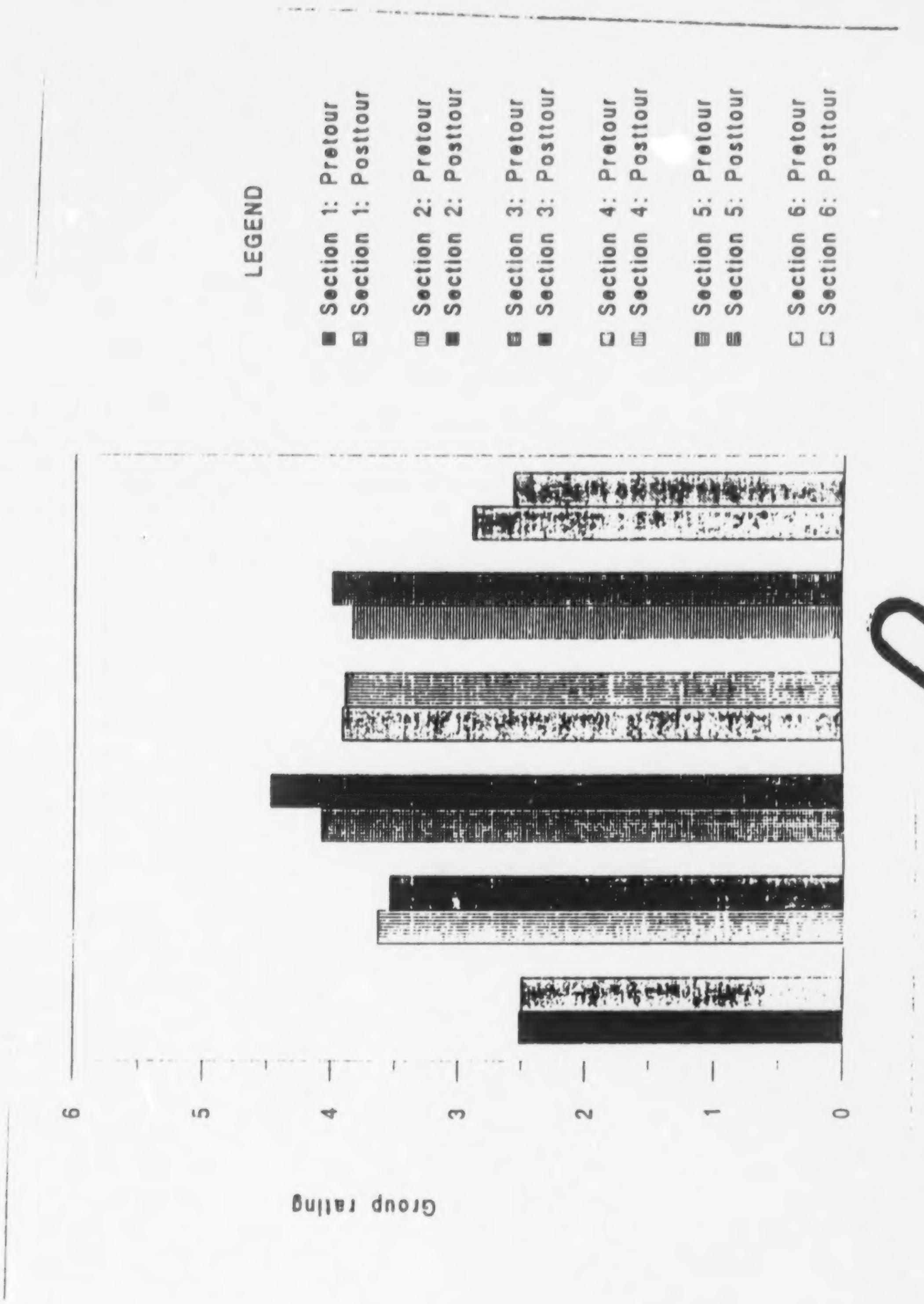

Figure 1. Pre- and Posttour Comparison of Program Sections

($t = 6.114$, $p = .001$), Sections 1 and 4 ($t = 3.862$, $p = .001$), Sections 1 and 5 ($t = 5.526$, $p = .001$), Sections 2 and 3 ($t = 2.974$, $p = .005$), Sections 2 and 6 ($t = 2.577$, $p = .013$), Sections 3 and 6 ($t = 5.112$, $p = .001$), Sections 4 and 6 ($t = 3.430$, $p = .001$), and Sections 5 and 6 ($t = 5.124$, $p = .001$).

Percentage responses for individual pieces ranged from 0% to 18%. Combined percentages (first and second choice) for each piece are reported in Table 3.

In free-operant responses, subjects supplied specific reasons for selection preference. These ranged from personal comments, such as "fun to perform," "it's neat, it's cool, it's great," and "it kills the audiences" to musical comments such as "rich harmony," "the polyphonic style," and "Baroque/Renaissance color."

Of the 52 responses to the question "What, in your opinion, are the advantages of a single performance of a program?," 5.7% stated no advantages, 3.8% were audience related. An equal number of comments dealt with having a single opportunity to give it their best or attaining appropriate performance level, and less time involvement with the music or freshness and spontaneity of program.

In the 66 responses to the question "What, in your opinion, are the advantages of multiple performances of a program?," 62.1% were related to improvement or the opportunity to correct mistakes; 13.6% dealt with musical growth, 6.1% mentioned reaching different audiences, 6.1% on performing in different settings, 6.1% travel and social ties with colleagues, 3% with time issues, and 3% commented on reduced stress for the singers.

When asked about number of times a program should be performed, 2 subjects indicated that they preferred to perform it once, 24 indicated that they preferred multiple performances, while 24 indicated no preference for one or the other.

Discussion

This study was an empirical investigation of commonly held ideas of concert programming; specifically, examining whether or not singers' preference for selected repertoire reflected some of those concepts. Decker and Kirk (1988) suggested that "each group of selections in a well-conceived concert will have its own shape and its arresting moments" (p. 158). In this case, it appears that, when graphed, singers' preference indications for program sections show a definite curve which peaks at Section 3 and then decreases. Upon examination of data in Table 3, one might conclude that each program section did indeed have its own shape, and that the last section showed an increase in preference through each musical selection.

Paired sample t-tests also showed some significant differences between sections. In analyses of both pre- and posttour data, significant differences were found between Sections 1 and 2, 3, 4, 5, and between Sections 6 and 3, 4, 5, demonstrating a definite shape. Significant differences were also found between Sections 2 and 3 in posttour analyses demonstrating the achievement of a higher peak in posttour preference ratings.

The piece receiving the highest percentage rate for both pre- and posttour ratings was *When David Heard* by Weelkes (pretour = 17%, posttour = 18%). Only one piece, *Get to Bed*, achieved 0% preference, and

Table 3

Combined percentage; first and second choice

	Pretour	Posttour
Section 1		
With a Voice of Singing	3	1
Ave Maria	15	17
All You Works of the Lord	11	9
Section 2		
Sing Joyfully	1	1
When David Heard	17	18
Hosanna to the Son of David	1	1
Section 3		
Jauchzet dem Herrn	9	4
Section 4		
Trois Chansons Bretonnes (combined)	2	1
La Nuit en Mer	5	4
La Complainte des Ames	4	5
Soir D'Ete	2	2
Section 5		
Get to Bed	3	0
Danse, mon moin', danse!	1	1
Tvenne folkvisor (combined)	0	1
Ant han dansa med mej (The Dance)	2	4
Femton finnar (Fifteen Finns)	5	3
Section 6		
John Saw Duh Numbuh	3	1
Death is Gonna Lay His Cold	7	11.5
I Will Pray	9	15.5

this in the posttour survey only. *Hosanna to the Son of David, Get to Bed,* and *Danse, mon moin', danse!* were prepared and conducted by graduate assistants. This may have been a confounding variable in preference ratings for these selections. The two pieces receiving the greatest percentage increase, between pre- and posttour, were *Death is Gonna Lay* by Thomas (4.5%) and *I Will Pray* by Smallwood (6.5%). Both these selections were spirituals and included soloists. *Jauchzet dem Herrn* by Pachelbel showed the greatest decrease in pre- to posttour percentages (5%). Interestingly enough, though this piece decreased in preference ratings, when it was considered as a section of the program, it received the highest rating of all. It may be that its double choir composition and level of difficulty contributed to its position as the culminating point of the program. This piece may have presented the greatest challenge to the choir overall, due to its compositional style and because it was in German. Time passage (tour) and learning (rehearsals and

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performances) seemed to affect preference somewhat, but preference contour of the general program was maintained.

A wide variety of advantages for single and multiple performances were listed by survey participants. Of particular interest were comments regarding possible boredom with music that was performed several times (included under the rubric of "freshness and spontaneity of a single performance"). This type of comment might encourage educators to help singers continue to become more musically sophisticated as they rehearse and perform repertoire in order to keep the experience "fresh." Ideas for technical improvement and musical refinement should be a part of every repetition in order to encourage on-task performance and musical growth. Nevertheless, despite the reoccurrence of this type of comment, when singers were asked about advantages of a single performance, 48% of those surveyed indicated that they preferred multiple performances and 48% indicated that they had no particular preference. This may suggest that the choir had been challenged by the repertoire and perhaps indicates an appreciation for a second chance at singing the program.

Programming may be the crux of a performance ensemble's survival, both from the singers' and audience's point of view. As educators, it is our responsibility to provide learning experiences for our students which engender an appreciation for a wide variety of styles of music and understanding of the need for repetition in the process of refining selections in performance. Additionally, it may be to the students' and ensemble's advantage to perform the concert program more than once, given that so much time and effort is put into the learning of the material. Further research might focus on different types and sizes of performing ensembles or on a variety of concert programs. Additionally, an investigation of this type could be done over the course of a whole semester or from the introduction of a specific piece, to its performance. Findings might help choral educators better understand what styles of music or types of compositional elements are both challenging and rewarding for their students.

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THE EFFECT OF LIVE VERSUS VIDEOTAPE INSTRUCTION ON HIGH SCHOOL SINGERS' FRENCH DICTION

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It has been said that the beauty of the choral art is found within the unique expression of words through music. Music may enable hidden thoughts and ideas to emerge from the text evoking a more powerful impression on the listener. Douglas McEwen stated in a text by Glenn that "special music seems to be that which illumines and gives dimension to the textual idea in a particularly expressive way" (McEwen, 1991, p. 84). One responsibility of the conductor is to bring the music to life, and for this to occur, the text should flow naturally from the musical phrase. A challenge faced by choral conductors is the unification of word flow during ensemble singing. It is through the application of diction training that the choral conductor unifies the individual sound, allowing the text to be understood without diminishing the impact of the musical phrase.

Very little research has been devoted to the pedagogy of non-English diction in the choral rehearsal. The French language in particular is avoided, due in part to the difficulty it presents regarding unification; and, because there are fewer sounds that are equivalent in the English language, especially when compared to languages such as Latin and Italian (Dahlman, 1991; Epp, 1993; Grubb, 1979). French is a "legato" language, and one that has inherent singing qualities which are conducive to training proper breath support and tonal resonance in young singers (Bernac, 1970; Grubb, 1979). The language should not be an obstacle to the beauty of the choral music, but rather may enhance the possibilities for its realization.

Through the review of literature the researcher found an extremely small percentage of French choral music taught in today's choral music programs (Wolverton, 1990). Many explanations may be offered: (a) French diction takes too much time to perfect, (b) French literature is not suited to one's particular ensemble, or (c) the director is not "comfortable" with French. In a recent study by Epp (1993) 198 respondents were asked to indicate their level of comfort for 14 non-English languages using a Likert scale of 1-5 (1 = least comfortable to 5 = most comfortable). The French language yielded a mean comfort level of 2.65. It was apparent that further French diction instruction would be useful for the secondary public school choral director. Since choral rehearsal time is precious to most choral directors, efficiency is key to teaching technique. The time required for diction training within the rehearsal may be minimized if incorporated into the warm-up procedure. "Exercises and vocalises in the warm-up period are invaluable vocal training as well as ideal opportunities to emphasize specific vowel sounds" (Decker, 1977, p. 7). Decker also suggests that singers need to memorize vowel sounds physically and mentally before they can produce them effectively. Memorization results from repetition (Peters & Miller, 1982). In order to produce correct vowel sounds one should have many opportunities for repeated practice. It would seem beneficial then, to vocalize on many different vowels and not concentrate solely on the Italian-based sounds. Before presenting a selection to the choir that contains unfamiliar vowel sounds, singers should experience these new sounds through the exercise routine, and begin to memorize the feeling of producing less familiar vowels. Subsequent rehearsal of the new selection should be more efficient and successful.

The effective teacher is one who presents material in a variety of ways to stimulate the learning process. Audio, video, and computer-assisted instruction have become popular teaching tools in the foreign language classroom. Studies show students enjoy learning and retention levels are high when computer and video-assisted learning takes place (Otten, 1988; Klinghammer, 1990; Tomizawa, 1991). Instructional videotapes within the choral music classroom have been limited to conducting, rehearsal technique, and vocal technique (Adams, 1991; Ehly, 1988; Haasemaan & Jordan, 1989; Pfautsch, 1988). Therefore, the purpose of this study was to determine the effectiveness of using videotape versus live instruction to teach French vowel sounds during choral warm-up procedures.

Method

A total of 120 high school choral singers were subjects for this study. The singers were members of the select ensemble from six schools. the investigator selected schools known to have outstanding choral programs based on the following information: superior contest ratings in the past five years, program growth and stability, and the investigator's personal knowledge of each director. The enrollment of each school was between 700 and 1400. The number of students ($N = 89$) completing the study reflects a 26% mortality rate. Directors were asked questions concerning the use of French diction in the particular ensemble, and were chosen to participate if the students had never been exposed to French in choir. The students were given a Students Diction Survey (SDS) to complete before the investigator's first visit. Student stating any current or prior experience with French were asked not to participate in the lesson and taping procedures, but were asked to complete a French Student Evaluation form answering questions concerning each lesson to insure that all students were on task.

Time restriction is a factor when planning any rehearsal, and was therefore, an important consideration in the design. The lessons were designed with a variety of concise instructions and exercises, allowing many practice opportunities with further instruction, and closing with a sense of anticipation toward the next lesson. Reinforcement was more difficult to plan, and was offered in association with the concept of intrinsic motivation. By giving students enough information in a variety of ways, thus enabling them to form the correct response, the students' innate drive for competence might become self-sustaining.

Pre-Treatment Evaluation

During the first class meeting students were separated into "participating" and "non-participating" groups. This distinction resulted from information gathered via the SDS. The two Testing Phrases (TP1 and TP2) were distributed (see Figure 1). The melodies were composed to enhance the natural syllabic stress of the French text. Range was limited and conducive to any voice type, and the tunes were written to be sight-read with ease. The students listened as a group to TP1 as it was played on the piano. They were asked to sing TP1 on the syllable "la" two times. The investigator paused for ten seconds while the students silently read the text to themselves with no diction instruction given. Students were instructed to make an educated guess as to what they thought the words might sound like. Following this procedure, students were asked to read the text silently in rhythm while the melody was played on the piano. Students were then asked to sing TP1 on "la" a third time. The same procedure immediately followed for TP2, with the total time for the melody introduction portion of the pre-treatment evaluation taking approximately 10 minutes. Taping of individual students' responses took place in a quiet room away from the choral rehearsal room. Students entered and signed their names on a numbered list indicating individual tape numbers. Students were recorded on high quality magnetic tape using a Shure unidirectional microphone and a Marantz PMD 420 cassette recorder with the recording level set between 7 and 8, standing approximately 3 to 4 inches from the microphone.

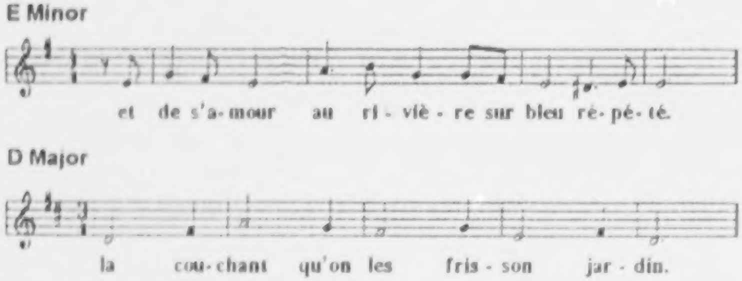
E Minor
et de s'a-mour au ri - viè - re sur bleu ré - pé - té.
D Major
la cou-chant qu'on les fris - son jar - din.

Figure 1. Testing Phrases

Before taping, TP1 was played on the piano to refresh the memory and to aid in relaxing the students. Motivation and encouragement were considered a key factor at this point. Each student was told there would not be a "grade" given for the response but that it was important to make the most educated guess possible and to sing with confidence. The same procedure immediately followed using TP2. Pre-treatment evaluation taping required approximately 3 minutes per student. Students not participating in the study stayed in the rehearsal room working on assignments given them by their choir director or practiced in other rooms.

Experimental Group Treatment #1

The six ensembles were randomly divided to receive video instruction on either Lesson 1 or Lesson 2. Three groups received video instruction on Lesson 1, the remaining three received live instruction. The groups received the opposite method of instruction on Lesson 2. Care was taken by the investigator to make lessons as much alike as possible except for the experimental variable (see Figure 2).

At the first lesson, the appropriate worksheet was distributed. For students receiving video instruction, a brief scenario was described, explaining

LESSON 1 SCRIPT:

We will begin with exercise 1 on your song sheet, reviewing vowels you commonly sing and placing them in French words. Repeat [i] [e] [ ]. Sing after me. **SING EXERCISE 1A**

The two words will utilize the flipped or rolled "r." Repeat "ri." Use a light "d" sound if you are unable to flip the "r." **SING EXERCISE 1A & B**

There are two "a" vowels in French, a bright and a dark. Repeat [ ] [a]. We will use the bright [a] in this exercise. **SING EXERCISE 1C**

The word "au" is simply the [o] vowel but with lips pulled over the teeth. Say "au." The [u] is one for which you really need to pucker. Say "s'amour." **SING EXERCISE 1D**

Now to the French pucker vowels. The first sound will have the most pucker and it starts with the [i] vowel. When saying [i] keep the sides of the tongue on the upper molars and the tip on the bottom front teeth. Now pucker your lips over that tongue position. You should feel lip tension...

LESSON 2 SCRIPT:

Bonjour Classe. Today before we begin singing we are going to experiment with some new sounds. These are the French nasal vowels. The tone for these vowels is resonated in the nasal cavities, it is never placed in the nose. The feeling is somewhat like a yawn that might be felt behind the nose. The key to producing a correct nasal vowel is to start with the correct foundation vowel and then move the back of the tongue to achieve the nasal quality. In the following exercises we will end with a word using the nasal vowel. The squiggle mark above some vowels is called a tilde and indicates that it is a nasalized vowel. Let's practice first with the dark [ɑ]. When you sing [ɑ̃] lift the back of the tongue slightly, being careful not to close the throat by touching the tip of the tongue on the bottom front teeth.
SING EXERCISE 1. Sing after me. Remember to only lift the back of the tongue slightly. Sing again after me.

Now begin with the open [ɛ] vowel. The middle of your tongue should drop as the back lifts slightly. Your mouth should be in a half smile when nasalizing this vowel. It may sound a little funny to you. Repeat [ɛ̃].
Sing after me. Now let's alternate between "dans" and "din" to feel and hear the difference. **Sing after me "dans" "din," "dans" "din."**

The next vowel to nasalize will be the sound in the word "bleu." Repeat [oe] [o͠e]. Now keep that tip on the bottom front teeth and leave your month in a half pucker. **Sing again after me.**

Alternate between these three nasals. Be sure to pucker more on "d'un" and think [ɑ̃] for "dans." **Sing after me "dans" "din" "d'un," "dans" "din" "d'un."**

Remember when producing a nasal, never allow the tip of the tongue to touch the hard palette making an "n" sound...

Figure 2. Lesson Scripts

how and why video may be used in a choral rehearsal. This scenario was used primarily as a motivation technique. The students receiving live instruction were given a brief explanation concerning the use of a script in the lesson. Both introductions were less than one minute, and Lesson 1 was approximately 15 minutes in length.

Following the lesson, students returned to the taping facility in the order of the pre-examination taping. No further instruction was given other than a single playing of TP1 for each student to refresh the memory and to aid in relaxation. Post-treatment taping of TP1 took approximately 30 seconds. Students were taped individually, therefore some tested immediately after instruction, others waited up to 20 minutes after instruction. An ANOVA was applied to study the scores as they related to time delay.

Experimental Group Treatment #2

Lesson 2 was presented in the final class meeting. Lesson worksheet 2 was distributed. The second method of instruction was presented and the above scenarios were again paired with the appropriate method. Lesson 2 was approximately 15 minutes in length. The final taping immediately followed the presentation of Lesson 2. No further instruction was given other than a single playing of TP2. Post-treatment taping of TP2 took approximately 10 seconds. At the close of each lesson the lesson worksheets and the evaluation forms were collected.

Selection of Adjudicators

The adjudicating procedure was crucial to this project. Six judges were selected to participate in the evaluation procedure of the study. Three were chosen due to their extensive choral conducting background and experience with French choral literature at both the high school and college levels of instruction, and three were chosen on the basis of their experience as professional singers and voice teachers, and their knowledge of the French language in song.

Tape Evaluation

Two master tapes were created from the individual tapes ($N = 89$) with the four selections per student randomly mixed to control for possible judging bias (Fisher, 1989). Three master tape sets were made presenting individual students' responses in differing order to control for judges' fatigue (Fisher, 1989). The first set began with student number 1, the second set began with student number 30, and the third set began with student number 60. After evaluating each group of ten students judges were instructed to take a three-minute break. At the mid-way point in the tape evaluations, judges took a 15-minute break. Sony UX90 High Bias Extra Uniaxial tape was utilized in each master tape set, and a Sony FM/AM Stereo Cassette-Corder CF3-W301 was used to create the master tape from the individual evaluation tapes.

All judges met at the same time to complete the evaluation, and were divided into three pairs (choral expert and vocal expert in each group, matching the number of master tape sets). Each was given a packet which included a letter of directions to evaluators and evaluation forms. For each student evaluation, judges circled any French word(s) from TP1 and TP2 that they considered inaccurate and rated the diction of each sung phrase on a Likert

Scale of 1 = worst to 5 = best. Because judges' evaluations revealed that half had been trained in "standard" French and half favored pronunciations from regional dialects, only the evaluations of the three trained in standard French were used since the taped lessons employed the standard French pronunciation. An inter-judge reliability rate of 81% was calculated for these three for the data as outlined by Madsen and Madsen (1981).

As an introduction to the evaluation procedure the investigator presented the directions to the adjudicators verbally in order to answer any questions concerning the form and to clarify possible pronunciation questions. The entire evaluation process took approximately 3 hours.

Results

Data concerning the dependent variable of this study (the accuracy of French diction) were analyzed using the MYSTAT computer program (Hale, 1992). The collected data were based on a Likert 1-5 rating scale (1 = worst, 5 = best). A series of independent and dependent *t*-tests were applied to determine if significant differences existed between video and live instruction methods, and also between TP1 and TP2. An Analysis of Variance (ANOVA) was applied to investigate the difference in scores as a function of the amount of time between instruction and testing. Data indicated differences in the groups' pretest scores ($t = 1.985$, $df = 87$, $p = .05$) therefore gain rather than posttest data were used in the analysis.

An independent *t*-test was used to compare the gain scores across the instructional methods. Results (Table 1) indicated no significant difference in each group's mean gain score ($t = .773$, $df = 87$, $p = .442$) since both instructional methods yielded an approximate gain of 1 point for TP1.

An independent *t*-test also was used to compare the means of the gain scores between instructional methods for TP2. Results again indicated no significant difference in each group's mean gain score ($t = .201$, $df = 87$, $p = .841$) as both instructional methods yielded a gain of over 1 point. These results revealed equivalent learning (change) occurring for groups receiving taped or live instruction.

An ANOVA was performed on the combined groups' posttest data ($N = 87$) to evaluate the possible effect of time delay on retention of the information. It was determined that up to five students in each of the six choir settings were able to tape during a 5 minute time period. Four groupings resulted with increasing increments of 5 minutes each (Table 2). Data indicated there was no significant difference in posttest scores of four groups for TP1 ($F[3,83] = .303$, $p > .05$) as a function of test administration delay.

A second ANOVA was performed on the combined groups' posttest scores for TP2. Results were found to be similar to those of TP1 (Table 2). Data indicated there was no significant difference in posttest scores of four groups for TP2 ($F[3,83] = 2.05$, $p > .05$) as a function of test administration delay. Those students testing 20 minutes after instruction had scores similar to those testing immediately following instruction.

A paired sample dependent *t*-test was administered on the pretest versus posttest scores for TP1 live instruction ($n = 34$). Data indicate a significant difference between pretest and posttest scores following a 15-minute live instruction ($t[33] = 6.766$, $p < .001$). The posttest scores were .87

Table 1

Video Versus Live Pretest/Posttest and Gain Scores for Testing Phrases 1 and 2

Testing Phrase 1

	Pretest		Posttest		Gain	
Group	M	SD	M	SD	M	SD
TP1 Live ($n = 34$)	2.20	.83	3.05	.93	.87	.75
TP1 Video ($n = 55$)	1.91	.53	2.90	.66	1.00	.65

Testing Phrase 2

	Pretest		Posttest		Gain	
Group	M	SD	M	SD	M	SD
TP2 Live ($n = 55$)	2.24	.81	3.32	.7	1.08	.76
TP2 Video ($n = 34$)	2.11	.88	3.18	1.05	1.07	.90

higher. Data indicate a significant difference in pretest and posttest scores following a 15-minute video instruction ($t[54] = 11.414, p < .001$). The posttest scores were 1.00 higher. Posttest scores were slightly higher with video instruction on TP1.

A paired sample dependent *t*-test was also utilized on the pretest versus posttest scores for TP2 video instruction ($n = 34$). Data indicate a significant difference in pretest and posttest scores following a 15-minute video instruction ($t[33] = 7.143, p < .001$). The posttest scores were 1.07 higher. Data indicate a significant difference in pretest and posttest scores following a 15-minute live instruction ($t[54] = 10.475, p < .001$). The posttest scores were 1.08 higher. Posttest scores were relatively similar for both instruction methods on TP2.

All students were asked to participate in a final summative evaluation of each lesson to aid the author in future research. Students generally felt that their performance of TP1 material was average to good with either method of instruction, and the same was true for TP2.

A final question was posed concerning students' views regarding videotaped lessons and students' willingness to work with a videotape in the future. Results were generally favorable. Seventy-nine percent said that they felt the video instruction was helpful and they would enjoy future video instruction.

Table 2

Summary of Posttest Scores for Testing Phrases 1 and 2

Testing Phrase 1

Time Between Study and Testing	N	M	SD
0-5 minutes (Group 1)	30	2.99	.86
6-11 minutes (Group 2)	25	3.01	.85
12-17 minutes (Group 3)	22	2.83	.72
18-23 minutes (Group 4)	10	3.07	.49

Testing Phrase 2

Time Between Study and Testing	N	M	SD
0-5 minutes (Group 1)	30	2.99	.86
6-11 minutes (Group 2)	25	3.01	.85
12-17 minutes (Group 3)	22	2.83	.72
18-23 minutes (Group 4)	10	3.07	.49

Discussion

The purpose of this study was to investigate and compare the effectiveness of videotape versus live instruction in high school choral ensembles for French diction for individuals. A systematic approach utilizing the warm-up/vocalise strategy was incorporated into a live and a videotaped presentation with both methods using the same material. The vocalise method was designed to teach unfamiliar vowels in a familiar exercise setting, and gradually incorporate new words into the final song, or in this case, the testing phrases.

Two lessons were designed. The first lesson focused on the French pucker vowels, and the second lesson focused on the nasal vowels. A comparison of the live instruction posttest scores and the videotape instruction posttest scores for Lesson 1 revealed no significant difference. Each method yielded an approximate gain of 1.0, however the videotape instruction method yielded a slightly higher gain. A comparison of the live posttest scores and the videotape posttest scores for Lesson 2 also revealed no significant difference. The gain was over 1.0, possibly indicating the French nasal vowels may be easier for the beginner to reproduce than the pucker vowels.

The investigator compared the scores as they related to time of taping following instruction. ANOVA results revealed no significant differences in posttest scores from the taping of the first subject to the taping of the last subject, suggesting no memory loss after 20 minutes. In fact, scores of those tested 15 to 20 minutes after instruction were actually slightly higher than scores from subjects tested 0-15 minutes after instruction for phrase 1 and phrase 2. Given the relatively short (15-minute) instructional period, the resulting gain of approximately 1.0 (a gain shown for both methods of instruction) seems notable. The combined data for TP2 may suggest that the French nasal vowels (TP2) are easier for the singer to reproduce in a short amount of instructional time, than the French pucker vowels (TP1). Adjudicator agreement as to "correctness of sound" was also greater for the nasal vowels.

The researcher chose to teach standard French diction as presented in the definitive Larousse and Harrup's Dictionaries, and discussed this with the adjudicators prior to evaluation. Analysis of the data in general revealed disagreement among experienced choral directors and singers as to "correct" French diction. An interjudge reliability ratio of 81% was attained by utilizing the scores from 3 of the 6 original judges. This study revealed a possible inconsistency in agreement among the "experts," and therefore, poses a problem which confronts future researchers.

Technology has made its way into the music classroom and the use of video information should be considered by the choral director. While this study utilized group viewing of video instruction, research indicates that individual use of audio/video aides can facilitate learning. Therefore, a study offering individual videotaped instruction as a supplement to the classroom rehearsal also might improve diction accuracy.

French diction provides the young singer many opportunities for improving technique. Incorporating these sounds into a planned vocalise routine for a greater length of time should strengthen the vocal mechanism while preparing the singer to perform French literature. The focus of this study was primarily French diction skills. A study concerning group video instruction of other languages may provide choral directors further teaching and programming options.

Choral music is an art with a foundation in communication, and as we move into the twenty-first century, choral music educators must increase awareness of communication in many languages. One essential task of the choral director is to continuously strive for new and effective approaches toward teaching. Further research is therefore suggested, that would combine diction training with advanced technological equipment, and the examination of resulting instructional influences.

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TEACHERS' PERCEPTIONS OF THE USE AND EFFECTIVENESS OF ELEMENTARY MUSIC TEXTBOOKS IN PUBLIC SCHOOLS OF SOUTHWEST MISSOURI

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Introduction

Elementary classroom teachers may be encountering the educational reform term, "textbook bound" more frequently. Educational critics suggest that teachers who are "textbook bound" or "textbook driven" are less effective in the classroom (Guskey, 1987). Reactions to the "textbook bound" phenomenon vary from modifications of teaching methods via more diverse resources to the total elimination of textbooks in some areas of the curriculum. Reformers attack classroom teachers who merely "cover the material," (e.g., pp. 1-43) rather than "teach skill."

Background

Pilot programs designed to master specific areas of learning without the help of textbooks are emerging in many elementary classrooms. The teachers plan units designed to master particular skills established as curriculum goals for the school district. The ultimate intent is to raise minimum assessment test scores. Such a model has been in practice at Gray Elementary, in the Springfield, Missouri R-12 School District for one year and test results have been favorable. Although textbooks may still be used as teacher resource material, future purchases of text sets for students is unlikely.

Is there a possibility for textbook elimination in the area of elementary vocal music? As the textbook elimination movement gains momentum, music series books could be endangered. Before elementary music series books become history, the question should be addressed: Do teachers feel that basal series books facilitate instruction and learning in the elementary music classroom?

Purpose of Study

Elementary vocal music teachers and students would be directly affected by textbook elimination. Their impressions, observations and insights on the use and effectiveness of music textbooks should be considered prior to ratifying textbook abandonment. It is important to consider what alternatives would be available to teachers if books no longer existed as well as the ramifications of the adoption of such alternatives. Information collected from the teachers on these issues could influence future decisions regarding the retention or elimination of the series books.

Research Questions

The following questions were addressed in a survey of elementary vocal music teachers:

1. What system (e.g. Orff, Kodaly, series books, etc.) do teachers use most in classroom instruction?
2. How much instructional material is taken from basal series texts?
3. Are some musical concepts more easily taught using textbooks and

If so, which ones?

4. Would text removal affect planning time?

5. Do students learn more about all aspects of music using series books?

6. Would students' attitudes regarding music and books be affected?

7. Would off-task behavior increase if books were removed?

8. What other resources could teachers use if basal series were not available?

Importance of the Study

To date, music researchers have failed to collect and analyze data relating to the necessity and effectiveness of elementary music books in mastering music skills and concepts which are described and prescribed in the National Standards for Education in the Arts (1994). This preliminary study attempted to report teachers' opinions, observations and assessments of current textbook usage and importance.

Definition of Terms

For the purposes of this study the terms basal music books or music series books or elementary series books refer to elementary vocal music textbooks for grades K-6 published by either Silver Burdett Ginn or Holt Reinhardt in either the 1988 or 1991 editions. The terms "textbook bound" and "textbook driven" are understood to mean teachers who teach from the book exclusively, presenting material in the order in which it is introduced by the author.

Limitations of this Study

Silver Burdett Ginn (1988 & 1991) and Holt Reinhardt (1988) were the only textbooks being used by teachers responding to the survey. Only Springfield Public Schools and ten selected area schools were surveyed. Two respondents had Kodaly certification and none had Orff or other certification. The study only reflects the opinions of the teachers surveyed.

Survey of Literature

Elementary classroom textbooks are the subject of extensive on-going research. Parents, educators and legislators are focussed on educational reform. At the heart of reform looms the textbook dilemma (Altbach, 1991). Textbooks in general are the subject of continuous scrutiny and evaluation. Extensive research exists which focuses on the evaluation of numerous texts. Critics have attacked textbooks from various perspectives.

Bias & Accuracy

Some proponents of textbook reform argue that historical information is not only inaccurate, but sexually, racially and culturally biased, and that teachers have little control over content (Carus, 1986). Teacher awareness is seen as the key to dealing with sexual and cultural bias in the classroom. New materials and activities to correct imbalances in the curriculum are outlined in the handbook, Confronting the Stereotypes: Grades 5-8. The author suggests that textbooks compound the "bias" problem and should be eliminated (Kirk, 1985).

Cultural bias has also been targeted by music researchers. One study noted that while elementary music texts contained some examples of African American music, they lacked background information to aid the music teacher in accurate presentation of the culture (Ellis, 1990).

Textbook Studies in Non-Music Areas

Freeman and Porter (1989) discovered differences between the text content and the teacher's topic selection, content emphasis and sequence of instruction in the 4th grade math curriculum in four Michigan classrooms. Similarly, another study found three teachers' explanations of their use of textbooks differed significantly from what was actually observed in each of their classrooms. This contradiction indicated ambiguity which might serve to confuse students (Hinchmann, 1987).

Gilbert Sewall (1989), criticized American history books and recommended extensive reform and revision. Other history texts were reported to contain inconsiderate text (Kantor, 1983) and/or lack of meaningful concepts (Haas, 1988) which resulted in general dissatisfaction with text content (Crismore, 1981). Television received more favorable marks for social studies content than texts (Hamm, 1988).

Science books sometimes encourage misconceptions (Abraham, 1992) and accompanying textbook tests failed to elicit higher-level thinking skills (Risner, 1987).

Marketing

According to Woodward (1987, p. 17),

> Publishers of textbooks seem caught up in a hectic revision cycle focussed on newness, artwork and copyright date, with little regard to actual improvement in instructional quality. Marketing ploys convince educators that they are buying something better than was previously available. Those reforming the textbook selection process are insisting on improved quality of textbooks but may be fueling the argument for textbook elimination.

Bernstein and Harriet Tyson criticized the textbook industry on the basis of bad writing, lack of ethical standards and test preoccupation. They advocated immediate reform of the industry (1988).

Selectors and Selection Criteria

Textbook selection is influenced by diverse curricular requirements, testing requirements, funding, readability formulas, physical standards and significant political influences. State and local adoptions for particular series often do not take into account individual teacher and student needs, according to How Can We Improve Textbooks which makes numerous recommendations regarding the textbook selection process (Armstrong, 1986).

States, such as Texas, which have adopted "selection criteria" for texts have long dictated national textbook content. However, one study shows that the "criteria" are vague and ambiguous and that final selection was based on the publisher's presentation rather than any criteria (Marshall, 1987). Teachers should play an important role in both textbook selection and content according to Howard Mehlinger who compared textbook reform in the U.S. with Soviet textbook reform (1989). The future of textbooks is uncertain, but change from the "status quo" is inevitable (Maxwell, 1985).

Music

Fewer studies have addressed the evaluation and analysis of elementary music series books. One such study looked at the learning sequences for melodic and rhythmic skill development in three different series texts comparing the stated texts' philosophies with Gordon's approach to sequential learning. Not only were the stated philosophies inconsistent with the learning sequences, "Stepwise and spiral movement in the learning sequences, curriculum organization, and the use of instructional techniques and methodology, were found to be incompatible with the Gordon approach (Byrd, 1989, p. 244)."

Michael Clementz analyzed 1988 elementary music series texts for content based on a composite of goals proposed by MENC and the Illinois Fine Arts Goals. He made the following conclusions: (a) goals for notation, vocabulary, and performance were emphasized in texts, (b) expressive qualities and aesthetics were emphasized to a lesser degree, and (c) improvisation, creativity, independent learning and commitment were rarely addressed. The study ranked each series according to lesson objective emphases at each K-5 level (Clementz, 1990).

Other researchers have addressed the recent technological advances in the area of elementary music programs to determine the applicability of computer teaching in the elementary music classroom. Students were tested on melody, rhythm, texture and tonality with the aid of computer instruction. Test results were very favorable (Venn, 1990).

Textbook Bound

An analysis of instructional research in the area of reading produced the label "textbook bound" as one of the four possible modes of instruction. Distinctions in the four categories included: (1) textbook-bound/designed, (2) textbook-bound/responsive, (3) textbook-free/designed, and (4) textbook-free/responsive. The textbook-bound modes of instruction always focused on student response to directed practice. The researchers philosophically suggested that the textbook-free modes of instruction were more effective pedagogical approaches because they allowed students to respond spontaneously when the teacher exposed students to the task in various ways (Duffy & Roehler, 1982, p. 3). Textbook-free instruction appears to be an important topic in current educational circles. Elementary vocal music teachers must be included in the decisions regarding textbook elimination in the elementary curriculum and should contemplate alternative teaching resources.

Methods and Procedures

Thirty-five elementary vocal music teachers in and around the Springfield, Missouri area were mailed a twenty-question survey instrument in February, 1994. The questionnaire was designed to investigate the use and effectiveness of elementary vocal music textbooks. Elementary vocal music teachers were specifically asked which text they used, what grades used texts, and were asked which grade levels of the text in use they preferred. The survey asked what percentage of total teaching time was text oriented, and teachers' opinions as to the effectiveness of the text in teaching specific music concepts. Other information gathered included pupils' preferences regarding materials, the respondents' teaching experience, certification levels, and weekly planning time. Surveys were sent through the Springfield Public School system mail department and ten were mailed to elementary vocal music teachers in nearby school districts. Included in the mailings were stamped, self-addressed envelopes for respondents to return the survey to the researcher.

Twenty of the thirty-five surveys (57%) were completed and returned. Responses were counted for each question and percentages were determined based on the total number of respondents. Data were then analyzed to determine use, preference, alternatives, projected student attitudes and achievement.

Results

Percentages were figured on each question of the survey after totaling all responses.

All teachers who responded to the survey had at least four years of teaching experience in elementary vocal music, with 55% reporting ten years or more experience. Fifty-five percent also held a Bachelor's in Music Education degree while 45% held a Master's Degree. Most of the respondents (60%) had participated in the selection process for textbooks.

The majority of teachers, (90%) use series music books. Use of books in combination with other systems such as Orff, Kodaly and Dalcroze was selected by 75% of all teachers surveyed. Silver Burdett Ginn (1991) series books were used by 80% of teachers with 20% of teachers using the Holt Reinhardt (1988) series. Series books were used with all grades according to 95% of teachers responding. Second and third grade texts were rated the strongest (40% of respondents) followed by the fourth grade text with 30% of teachers preferring that text. Regarding percentage of overall teaching materials, 80% responded that series books were used for more than 50% of their teaching materials.

On the importance of series books relating to teaching concepts, 80% agreed that some concepts are more easily taught with series books. Seven teachers felt all concepts are more easily taught using series books. Specific concepts mentioned that were more easily taught using series books included reading music, songs and form.

Teachers were asked about planning time and what they would anticipate if series books were eliminated. Planning time varied from less than one hour per week to more than four hours per week. Nineteen respondents (95%) said planning time would increase if books were eliminated. The one respondent who indicated no change in planning time used the Kodaly teaching system without series books.

The inquiry regarding meeting curriculum guidelines revealed that 60% felt series books partially meet those standards and 40% felt the guidelines were totally met by the series books.

Responses to the statement "students learn more about all aspects of music using series books," revealed that 55% of teachers agreed with the statement and 35% disagreed.

Teachers were asked to predict students' reactions to the removal of series books. Most teachers (55%) felt students would be less interested, while 40% thought there would be no change in students' interest level. Teachers did feel that students like their series books, with only 15% suggesting that students were indifferent to books.

Off-task behavior would likely increase according to 50% of those surveyed with 25% unsure about the effects on behavior.

All respondents indicated they would use accumulated files of resources if books were not available. One teacher pointed out the economic impact of eliminating books, since she would choose octavos and computer resources to teach her classes.

Series books seem to serve an important purpose in the elementary music classroom. The majority of teachers responding to the survey considered books a valuable necessity to their teaching effort. Thirteen different responses were recorded concerning what teachers liked most about series books. There were five or more teachers that mentioned multicultural lessons, listening lessons and general planning format as the series' strongest point in their opinion.

Discussion

The survey responses indicate that according to teachers in this sample, the removal of series books would indeed, impact teaching methods, lesson content, and planning time. Teachers predict that student attitude and achievement would decline. Additionally, off-task behavior would increase in their opinions. Music teachers are responsible for so much content in music concepts and aesthetic appreciation that is covered quite efficiently and sequentially in music texts. The common negative comments among elementary vocal music teachers about their profession relate to the time and physical demands which accompany the position. Indirectly, the survey responses seemed to indicate preferences for texts due to time constraints involved in Mastery Learning or other thematic approaches without texts.

Teachers who selected the textbooks quite naturally would favor the textbooks' continued use. This study revealed that even the teachers not involved in the selection process were still generally pleased with the text and found it helpful in planning and concept instruction.

Replicating this study in another school district could further validate the results. Teachers in southwest Missouri seem typical of teachers of Missouri and perhaps the country, but a survey beyond the regional boundaries of southwest Missouri would provide more global validity.

The respondents in this study generally were veteran teachers with more than ten years experience. Perhaps the teachers with less experience failed to respond due to demands on their time. A follow-up questionnaire could provide the answer to why less-experienced teachers did not reply.

This study surveyed music teachers and their opinions regarding student preference and reaction to text elimination. Another study could focus on the student for responses concerning texts. Also, with classroom teachers steering away from text use, would they prefer that music teachers follow suit?

Further experimental research into the actual effectiveness of series books in teaching students music concepts might validate the conclusions from these survey findings. Such a study should compare music achievements of elementary students taught using series books as well as achievements of students taught without series books.

Conclusion

Textbook usage is currently under intense scrutiny as shown in the numerous research studies on textbook reform, evaluation, and/or elimination. One trend currently being funded in some areas by government grants is total removal of series books on the elementary level. Elementary vocal music series books have not been targeted for removal, yet the uncomplimentary label of "textbook bound" or "textbook driven" has been used to describe some approaches to teaching music. The present research attempted to document music teachers' feelings and opinions about the presence or removal of textbooks in their music classrooms. This study indicates a generally favorable attitude regarding elementary music series books by the teachers who use them.

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THE EFFECT OF ACCOMPANIMENT TYPES ON SIGHTSINGING NOTE ACCURACY

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The purpose of this study was to determine the effect of different accompaniment types on sightsinging note accuracy. A secondary hypothesis was to confirm the effect of musical experience other than choral experience on sightsinging skill.

Preparation for the study involved the development of a survey of musical experience, two warm-up and four test melodies, and accompaniments for each melody. The accompaniment types used were block, arpeggiated, and independent. A capella was added as a fourth accompaniment condition to serve as a control.

The study was conducted with 152 high school students involved in concert choir. Experience was scored using a weighting system. Subjects were divided into three experience groups. The melodies were judged and scored giving one point per note.

The results were assessed using a two factor repeated measures analysis of variance. No significant difference in note accuracy was found as a result of the four accompaniment conditions. It was also found that musical experience other than choral experience does have a significant effect on sightsinging skill. No significant interaction between the accompaniment types and experience was found.

The results indicate that, although not significant, independent accompaniment provides the strongest link between melodic expectation and the notes or intervals to be sung followed by arpeggiated accompaniment, block accompaniment, and a cappella.

THE EFFECT OF MUSICAL TRAINING, GENDER AND MUSIC CURRICULUM ON MUSIC APTITUDE TEST RESULTS OF EIGHTH AND NINTH GRADE CHORAL STUDENTS

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The purpose of this study was to examine the results of a survey, including a music aptitude test administered to eighth and ninth grade choral music students (*N* = 262). The survey also collected information regarding subjects' musical training (including instrumental study), gender and grade. The music aptitude test was designed to test knowledge of musical terminology, aural identification of voice parts, instruments, excerpts from ranging style periods and exercises in choral adjudication. All instructions were given on tape, and answers written on a response sheet. The results of the study indicated significant differences in aptitude test results as a function of students' instrumental background and among individual schools. A positive correlation was found between students with instrumental background and higher aptitude test scores. Overall aptitude test scores ranged from 1 to 8 (8 = highest possible score), with a *M* = 5.88, *SD* = 1.55. Other statistical results include student rankings of two choral music examples of differing performance quality (good versus bad). Rankings of the two choral music examples were remarkably different. Curriculum guidelines were collected from each school, with two schools from the same district having the same guidelines. Curricular comparisons cannot be computed statistically, but are compared in the discussion portion of the study. Future study should be considered in the area of gender and curriculum as they relate to music aptitude results.

A COMPARISON OF THE EFFECTIVENESS OF TWO SEQUENCES FOR TEACHING RHYTHMIC PERFORMANCE AT THE COLLEGE LEVEL

Michael K. Dove
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The purpose of this research was to examine the effect of teaching performance understanding of rhythms before teaching the rhythmic icons at the college level.

Fifty-five college students participated in this study. Thirty-five students were asked to perform rhythms taught to them by rote and were then shown the notation and asked to perform again. Twenty students were taught rhythmic notation using a numeric counting system. The students were then asked to perform these rhythms without any rote instruction. All fifty-five students were given the same pre- and post-tests.

There was found to be no significant difference in rhythmic accuracy between those students who learned to perform rhythms by rote first and those who learned the notation first.

AN EVALUATION BY MISSOURI HIGH SCHOOL BAND DIRECTORS OF CRITERIA USED TO SELECT CONCERT BAND MUSIC

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The purpose of this study was to determine the rank order of the importance of selected criteria used in choosing band literature, and to explore whether school size, band program size, teaching experience, teacher education level, teacher attendance at state or national music conventions, or participation of concert bands in a festival or contest affects the rank order of criteria used for selecting band literature. Of additional interest was concert band music performed by Missouri high school bands that the band directors felt best represented music of the highest quality. The study was also designed to determine what literature the band directors felt best represented music of the highest quality from among all concert band literature.

The Criteria for Selecting Band Literature Survey (CSBLS) was mailed to 523 Missouri high schools, and 210 (40.1%) usable surveys were returned. Although there were no statistically significant differences in the rankings of the selected criteria for any of the independent variables, individual groups of criteria can be extracted from the entire list by locating the largest differences between adjacent means. Except for slight variances concerning band program size, band participation at festivals or contests, and teacher attendance at music conventions, these clusters of criteria remain consistent throughout the study. The following clusters of criteria were formed, from highest ranked to lowest ranked; Group 1: Musical quality/aesthetic value, Difficulty, Instrumentation, Well crafted composition, and Teaching goals; Group 2: Conductor appeal, Festival/contest suitability, Student appeal, and Highly recommended; Group 3: Audience appeal, Programming factors, Style/form/historical significance, Composer/arranger, and Features individual or group of band; Group 4: Transcription (exposure to other mediums); Group 5: Publisher's designated grade level, Original band work, and Cost; and Group 6: Publisher.

Respondents also indicated that of the 332 compositions performed during the school year, 92 were performed by two or more bands and 57 of the 190 composers of recommended pieces were listed by two or more directors. Although this study provides information which may assist the band director in selecting music, further research is suggested that would continue to examine this issue.

THE EFFECT OF COMBINED MUSIC CLASSES ON BEHAVIOR AND LEARNING

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Behavior and learning among 99 second-grade students and 98 third-grade students was measured in both a combined music class (two second- or third-grade classes with two music teachers meeting in the same space used for single classes) and a single music class setting (one second- or third-grade class with one music teacher). For the purposes of this study, off-task behavior was defined as talking and/or touching. Classes were videotaped in order to tabulate off-task behaviors. Because of the variance in the number of students per group, off-task behaviors were transformed to a ratio of off-task behaviors per 25 students. After the transformation it was found that no significant difference in the number of off-task behaviors in the single class verses combined class settings existed. The learning study used a pretest-posttest control group design. Second-grade students were tested on identification of instruments of the brass family. Third grade students were tested on correct placement of bar-lines in three different meters. Within each grade level, students were randomly selected to participate in a single or a double class. Results showed no significant difference in learning for combined classes as compared to the single or a double class. Results indicate that learning and behavior need not be a major concern for administrators who are considering combining classes due to limited space.

ANALYZING FLUTE PEDAGOGY: A DISCUSSION WITH SELECTED PEDAGOGUES

Linda K. Lancaster
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The purpose of this study was to compile information gathered from successful flute pedagogues in this country regarding flute instruction at the college level. An extant compendium of pedagogical approaches was not found. It was thought that this type of research could provide a much-needed base of knowledge for both performers and teachers of the flute. Topics researched included warm-up procedures, daily practice routine, tone production, tone color, circular breathing, vibrato, articulation, rhythmic alterations, alternate fingerings, method books, range, sight-reading, phrasing, repertoire, twentieth-century extended techniques, reading resources, and equipment selection.

The Flute Pedagogy Survey (FPS) was sent to the following outstanding artist/teachers: Julius Baker, John Barcellona, Samuel Baron, Frances Blaisdell, Julia Bogorad, Bonita Boyd, Leone Buyse, Linda Chesis, Michel Debost, Arthur Hoberman, Karl Kraber, Walfrid Kujala, Mary Posses, Paula Robison, Roger Stevens, and Gary Woodward. Fourteen of the surveys (88%) were returned.

The results of the FPS generally yielded a consensus response pattern. Thirty-four topics were listed as areas of agreement while only 14 areas of difference were documented. The majority of the flute instructors were in agreement regarding the following: warm-up procedures, exercises typically included in the daily practice routine, circular breathing, production of vibrato, method of teaching vibrato, approach to double tonguing, use of rhythmic alterations, use of alternate fingerings, recommended method/etude books, recommended repertoire at various levels, inclusion of extended techniques, recommended reading resources, and group class instruction. There was no agreement regarding preference for specific makes and models of instruments and headjoints.

Areas of diversity included use of whistle tones and note-bending exercises, division of practice time, recommended "essential" exercises, recommended lip formation, recommended method of tonguing (i.e., tongue placement, preferred syllables), expected upper range, and recommended repertoire used to develop specific abilities.

Future research is suggested to examine the teaching methodologies of other groups of flute instructors such as private instructors at the elementary and secondary levels. In addition, it may be beneficial to conduct a national study to better reflect the views of all college level flute instructors.

TOWARD A UNIFIED APPROACH TO BASS PEDAGOGY

Timothy Perkins
Central Missouri State University

The purpose of this paper is to explore the similarities in pedagogical techniques between "classical" and jazz bass. One pedagogical strategy would be to find general etudes that will simultaneously help a bass player's development in both styles. A large number of method books have been written concerning each individual style but very little discussion has taken place about developing a bass player's proficiency in both areas. In today's world a bassist would be well-served to develop both styles in order to be more successful at a time when the number of bassists proficient in both areas is growing.

Classically trained bassists tend to have an underdeveloped pizzicato technique, while it is generally agreed that most jazz bassists have an underdeveloped bow technique. The advantage of acquiring a more highly developed pizzicato technique for a classical player is the added control of timbre and pitch, not to mention increased dexterity and a more accurate concept of time as it relates to the steady click of the metronome or drum machine. The advantages of developing bow technique for the jazz player includes the attention given to melodic lines and the production of tone.

Classical bass etudes utilize melodic ideas in which the bassist must focus attention on good bowing technique in order to fully express the musical phrasing. In jazz styles, concentration on the melodic figures in such etudes can help facilitate the creation of intelligent melodies in solos and improvised bass lines. With attention also being focused on tone production, the jazz bassist can begin to experiment with the sounds available through a developed use of pizzicato.

The general demands in bass playing could be solved by compiling etudes that address the technical areas of timbre, pitch, dexterity, time, and the improvisation of meaningful solos and bass lines. This paper will explore classical and jazz etudes which address these technical areas and can be utilized by bassists to improve their technique in all facets of bass playing.

ADJUDICATORS,' CHORAL DIRECTORS' AND CHORAL STUDENTS' HIERARCHIES OF MUSICAL ELEMENTS USED IN THE PREPARATION AND EVALUATION OF HIGH SCHOOL CHORAL CONTEST PERFORMANCE

Sue Ann Stutheit
Illinois State University

The purpose of this study was to establish a hierarchy of musical elements used in the preparation and evaluation of a high school large choral ensemble. Adjudicators (*n* = 54), choral directors (*n* = 34), and choral students (*n* = 1290) from Arkansas, Colorado, Kansas, Missouri, New Mexico, Oklahoma and Texas completed the Music Contest Priority Survey (MCPS). Subjects ranked eight musical elements (balance and blend, diction, interpretation and musicianship, intonation, other performance factors, rhythm, technique, and tone quality) in order of importance when preparing and evaluating high school choral contest performance. Of the three groups, adjudicators and directors ranked elements most similarly, identifying intonation and tone quality as the first and second elements in importance. All groups identified other performance factors as the least important element.

Variables of students' experience in choral ensembles, private voice, and private piano were also considered in analyses of the data. Students with two or more years of piano experience were most accurate (34.1%) in predicting adjudicators' and directors' most important element (intonation), while students, with two or more years of voice experience most accurately predicted the least important element (other performance factors) to adjudicators and directors.

In addition, directors were asked to predict the elements that would be most important and least important to their students. Results indicated directors achieved 12.48% accuracy (students' most important element) and 31.63% accuracy (students' least important element). Students correctly identified their directors' most and least important elements 17.72% and 39.64% of the time respectively. Overall percentages of correct predictions are somewhat low, but results indicate that students predict their director's priorities better than directors predict those of students.

This study establishes a hierarchy of musical elements used by directors and students and adjudicators to prepare and evaluate large high school choral contest performances. This information may assist directors and students preparing for music contests by helping clarify common goals and objectives. Further research seems warranted that would continue the establishment of priorities in the area of preparation and adjudication in music contests.

CHANGES IN THE BAND PROGRAMS OF MISSOURI PUBLIC HIGH SCHOOLS USING THE EIGHT-BLOCK SYSTEM OF SCHEDULING

Dudley B. Wade
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Scheduling is an important aspect of music education. Research has not investigated the relationship between the distribution of instructional time in traditional and nontraditional schedules and the quality of instrumental music programs.

The purpose of this study was to examine the changes found in the band programs of Missouri public schools that have adopted the eight-block system of scheduling. In the eight block system, students are scheduled for eight classes but only meet four of these classes per day for 88 to 90 minutes per period. The schedule alternates every day so a complete cycle of classes requires two weeks.

The respondents in this study were band directors and principals working in the 13 Missouri public schools that used the eight-block system of scheduling during the 1993-94 school year. To qualify for the study, teachers ($n = 11$) and principals ($n = 13$) were required to have worked for a minimum of one year with a traditional schedule and a minimum of one year with an eight-block schedule.

Questionnaires were sent to the subjects that dealt with changes in the quality of the band program, the enrollment of the band program, discipline problems, teaching methods, and views on the eight-block schedule.

Results of the study showed that since using the eight-block system:

(a) Only 18% of the schools showed improvement in one or more areas used to evaluate quality, while 54% had a drop in at least one of the three areas.

(b) With regard to enrollment, 45% of the band directors indicated an increase and 55% saw no change.

(c) In the area of discipline, 82% of the band directors saw no change in the amount of discipline problems while 9% saw an increase and 9% saw a decrease.

(d) With regard to teaching methods, 36% had not changed their methods while other responses included more emphasis on fundamentals, sectionals, history, theory, listening, and work sheets.

(e) Principals and teachers agreed on the positive aspects of the eight-block system but not on the negative aspects.

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The *Missouri Journal of Research in Music Education* (ISSN 0085-350X) is published annually by the Missouri Music Educators Association. Copies can be obtained by sending $2.00 (cash, check, or money order, payable to Missouri Music Educators Association) to the associate editor at the address listed on the next page. Inquiries relating to the availability and cost of back issues should also be directed to the associate editor.

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